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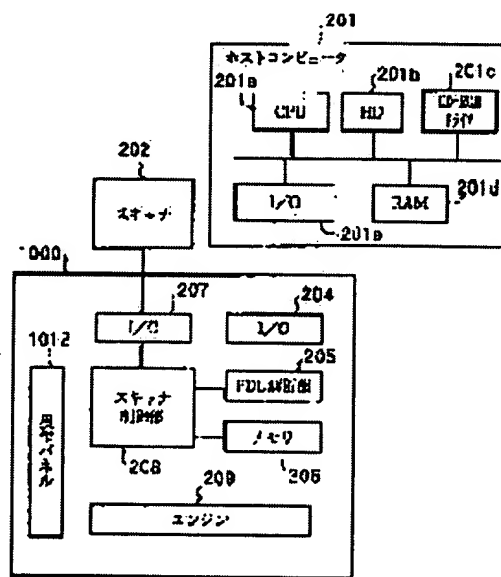
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(54) PRINTER, INFORMATION PROCESSOR AND THEIR CONTROL METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To fetch the image data based on the instruction included in the print data and to output the image data after combining them with the print data.

SOLUTION: An instruction to combine the image that is read out of a scanner 202 is incorporated in the print data which are sent to a printer 1000 from a host device 201. Then the instruction is executed by the printer 1000 and the print data are combined with the scanner data. Meanwhile, the image read out of the scanner 202 is transferred to the device 201 which previews to display the received image. An operator selects an area that should be incorporated into an image formed from the print data on a review display screen.



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CLAIMS

[Claim(s)]

[Claim 1] The airline printer characterized by to have a detection means detect the instruction which directs composition with these print data and image data out of the print data transmitted from the external device, an incorporation means will incorporate image data if said instruction is detected by said detection means, and the image obtained based on said print data in the image data incorporated by said incorporation means and a synthetic means compound.

[Claim 2] Said instruction is an airline printer according to claim 1 characterized by including the instruction which directs the insertion field which inserts said read image data into a page.

[Claim 3] It is the airline printer according to claim 2 which is further equipped with a transmitting means transmit the image data incorporated by said incorporation means to said external device, and a receiving means receive the selection field information which shows the part which should compound in said image data from said external device, and is characterized by for said synthetic means to compound the image data contained to the selection field of said image data which said selection field information shows, and the image data of said insertion field.

[Claim 4] Furthermore, the airline printer according to claim 3 characterized by having a comparison means to compare said insertion field and said quota area size, and an information means to tell a user about this decision result when decision that magnitude changes with said comparison means is made.

[Claim 5] Furthermore, the airline printer according to claim 3 characterized by having a comparison means to compare said insertion field and said quota area size, and a means to stop actuation of the airline printer concerned when decision that magnitude changes with said comparison means is made further.

[Claim 6] Furthermore, the airline printer according to claim 3 by which it is characterized [equipped with the variable power means which expands or reduces the image data in said quota field, and is doubled with a comparison means to compare said insertion field and said quota area size at said insertion area size when decision that magnitude changes with said comparison means is made further].

[Claim 7] Furthermore, the airline printer according to claim 2 characterized by having a selection means to choose to which priority shall be given between the image data of this insertion field, and the image data of said selection field when data already exist in said insertion field.

[Claim 8] Furthermore, an airline printer given in either of claims 1-7 characterized by having a setting means to set up the resolution at the time of said incorporation means incorporating image data.

[Claim 9] Said image data is an airline printer according to claim 1 characterized by including the image data transmitted from a scanner.

[Claim 10] A data transmitting means to transmit print data including the instruction which directs the insertion field which is the information processor connected with the airline printer which can take in image data from a scanner, and inserts image data to said airline printer, A receiving means to receive the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, A display means to display the image data received by said receiving means, The information processor characterized by including an image data directions means to direct the image

data inserted in said insertion field, and a transmitting means to transmit the result depended on said directions means to said airline printer, based on the image data displayed by said display means.

[Claim 11] The image data incorporated by said receiving means is an information processor according to claim 10 characterized by including the image data to which resolution was lowered by said airline printer.

[Claim 12] The image data incorporated by said receiving means is an information processor according to claim 10 characterized by being able to lower resolution and being received by the information processor concerned.

[Claim 13] Said display means is an information processor according to claim 10 characterized by transmitting to said airline printer as a field of the image data which displays the frame of the size equivalent to an insertion field, moves said frame according to directions by said directions means onto the image data which received, and inserts the location and size of said frame in said insertion field with said transmitting means.

[Claim 14] Connected with the airline printer which can take in image data from a scanner. A reading means to be the information processor which can create document data and to read image data from a scanner through said airline printer according to the information on the insertion field which was included in document data and which should insert image data, An image data directions means to direct the selection field which shows the field of the image data inserted in said document data based on the image data displayed by display means to display the read image data, and said display means, The information processor characterized by including a print-data creation means including the information on said insertion field and said selection field to create the print data which can be interpreted with said airline printer, and to transmit to an airline printer, based on said document data, said insertion field, and said selection field.

[Claim 15] The information processor according to claim 14 characterized by displaying the frame showing a selection field while reading image data with said reading means and displaying this image with said display means, when it has further a carbon button display means to display the carbon button it is directed that reads said image data from a scanner when [which outputs said document data] purport directions are carried out and said carbon button is operated.

[Claim 16] Said carbon button display means is an information processor according to claim 14 characterized by displaying the insertion field in said document data when the carbon button on which the insertion field in said document data which insert the read image data is displayed is displayed further and this carbon button is operated.

[Claim 17] The frame in which the selection field displayed by said display means is shown is an information processor according to claim 16 characterized by what is displayed in the size corresponding to said insertion field.

[Claim 18] The information processor according to claim 16 characterized by having further a means to change the location of said insertion field, size, or its both, by operating the frame in which the insertion field displayed by said display means is shown.

[Claim 19] The data transmitting process of transmitting print data including the instruction which directs the insertion field which is the information processing approach connected with the airline printer which can take in image data from a scanner, and inserts image data to said airline printer, The receiving process which receives the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, The display process which displays the image data received according to said receiving process, The information processing approach characterized by including the image data directions process of directing the image data inserted in said insertion field, and the transmitting process which transmits the result depended on said directions process to said airline printer based on the image data displayed by said display process.

[Claim 20] The image data incorporated according to said receiving process is the information processing approach according to claim 19 characterized by including the image data to which resolution was lowered by said airline printer.

[Claim 21] The image data incorporated according to said receiving process is the information

processing approach according to claim 19 characterized by being able to lower resolution and being received by the information processing approach concerned.

[Claim 22] Said display process is the information-processing approach according to claim 19 characterized by to transmit to said airline printer as a field of the image data which displays the frame of the size equivalent to an insertion field, moves said frame according to directions by said directions process onto the image data which received, and inserts the location and size of said frame in said insertion field according to said transmitting process.

[Claim 23] Connected with the airline printer which can take in image data from a scanner. The reading process which is the information processing approach which can create document data, and reads image data from a scanner through said airline printer according to the information on the insertion field which was included in document data, and which should insert image data, The image data directions process of directing the selection field which shows the field of the image data inserted in said document data based on the image data displayed by the display process which displays the read image data, and said display process, The information processing approach characterized by including the print-data creation process including the information on said insertion field and said selection field which creates the print data which can be interpreted with said airline printer, and is transmitted to an airline printer based on said document data, said insertion field, and said selection field.

[Claim 24] The information-processing approach according to claim 23 characterized by to display the frame showing a selection field while reading image data according to said reading process and displaying this image according to said display process, when it has further the carbon button display process which displays the carbon button it is directed that reads said image data from a scanner when [which outputs said document data] purport directions are carried out and said carbon button is operated.

[Claim 25] Said carbon button display process is the information processing approach according to claim 23 characterized by displaying the insertion field in said document data when the carbon button on which the insertion field in said document data which insert the read image data is displayed is displayed further and this carbon button is operated.

[Claim 26] The frame in which the selection field displayed by said display process is shown is the information processing approach according to claim 25 characterized by what is displayed in the size corresponding to said insertion field.

[Claim 27] The information processing approach according to claim 25 characterized by having further the process which changes the location of said insertion field, size, or its both by operating the frame in which the insertion field displayed by said display process is shown.

[Claim 28] It is the computer-readable memory which memorizes the program which can be executed by computer. Said program The data transmitting process of transmitting print data including the instruction which directs the insertion field which inserts image data to an airline printer, The receiving process which receives the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, The display process which displays the image data received according to said receiving process, Memory characterized by including the image data directions process of directing the image data inserted in said insertion field, and the transmitting process which transmits the result depended on said directions process to said airline printer based on the image data displayed by said display process.

[Claim 29] The image data incorporated according to said receiving process is memory according to claim 28 characterized by including the image data to which resolution was lowered by said airline printer.

[Claim 30] The image data incorporated according to said receiving process is memory according to claim 28 characterized by being able to lower resolution and being received by the information processing approach concerned.

[Claim 31] Said display process is memory according to claim 28 characterized by transmitting to said airline printer as a field of the image data which displays the frame of the size equivalent to an insertion field, moves said frame according to directions by said directions process onto the image data which

received, and inserts the location and size of said frame in said insertion field according to said transmitting process.

[Claim 32] It is the computer-readable memory which memorizes the program which can be executed by computer. Said program The reading process which reads image data from a scanner through an airline printer according to the information on the insertion field which should insert image data included in document data, The image data directions process of directing the selection field which shows the field of the image data inserted in said document data based on the image data displayed by the display process which displays the read image data, and said display process, Memory characterized by including the print-data creation process including the information on said insertion field and said selection field which creates the print data which can be interpreted with said airline printer, and is transmitted to an airline printer based on said document data, said insertion field, and said selection field.

[Claim 33] Said program is memory according to claim 32 characterized by to display the frame showing a selection field while reading image data according to said reading process and displaying this image according to said display process, when said carbon button is operated including further the carbon button display process which displays the carbon button it is directed that reads said image data from a scanner when [which outputs said document data] purport directions are carried out.

[Claim 34] Said carbon button display process is memory according to claim 32 characterized by displaying the insertion field in said document data when the carbon button on which the insertion field in said document data which insert the read image data is displayed is displayed further and this carbon button is operated.

[Claim 35] The frame in which the selection field displayed by said display process is shown is memory according to claim 34 characterized by what is displayed in the size corresponding to said insertion field.

[Claim 36] Memory according to claim 34 characterized by having further the process which changes the location of said insertion field, size, or its both by operating the frame in which the insertion field displayed by said display process is shown.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the information processors which control the airline printer and it which compound and print the image read from the scanner etc., and the image created based on print data, and those control approaches.

[0002]

[Description of the Prior Art] When printing conventionally the image containing the image data incorporated with the scanner, and the print data described by PDL (Page Description Language) transmitted from a host computer, image data once needed to be incorporated from the scanner to the host computer, the image data and PDL data needed to be compounded, and the printer needed to be made to transmit and print the data.

[0003]

[Problem(s) to be Solved by the Invention] However, if the size of the data read with a scanner is large when the scanner and the host computer are connected through the network, a high load will be covered over a network. Moreover, a lot of memory for storing image data was needed for the host computer, and there were problems, like data processing in a host computer takes time amount.

[0004] This invention is made in view of the above technical problem, incorporates image data according to the directions included in print data, and aims at offering the information processors which send print data, and those control approaches to the airline printer and this airline printer which compound and output the image data and print data.

[0005] Furthermore, it aims at offering the information processors which send print data, and those control approaches to the airline printer and this airline printer which can compound print data and the read image data by the method of desired composition by including the directions about a trim and the synthetic location of print data and the image data compounded in print data, and transmitting to an airline printer.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention builds the instruction of the purport which compounds the image read from the scanner into the print data transmitted to a printer from host equipment, performs the instruction by the printer, and makes print data and scanner data compound. In that case, the image read from the scanner is transmitted to host equipment, and indicates by preview in host equipment. And an operator is made to choose the field which should be included in the image formed from print data on a preview display screen.

[0007] Moreover, other configurations for this invention to attain are as follows.

[0008] That is, it has a detection means to detect the instruction which directs composition with these print data and image data out of the print data transmitted from the external device, an incorporation means to incorporate image data if said instruction is detected by said detection means, and the image obtained based on said print data in the image data incorporated by said incorporation means and a synthetic means to compound.

[0009] Or a data transmitting means to transmit print data including the instruction which directs the insertion field which is the information processor connected with the airline printer which can take in image data from a scanner, and inserts image data to said airline printer, A receiving means to receive the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, A display means to display the image data received by said receiving means, Based on the image data displayed by said display means, an image data directions means to direct the image data inserted in said insertion field, and a transmitting means to transmit the result depended on said directions means to said airline printer are included.

[0010] Or connected with the airline printer which can take in image data from a scanner. A reading means to be the information processor which can create document data and to read image data from a scanner through said airline printer according to the information on the insertion field which was included in document data and which should insert image data, An image data directions means to direct the selection field which shows the field of the image data inserted in said document data based on the image data displayed by display means to display the read image data, and said display means, Based on said document data, said insertion field, and said selection field, a print-data creation means including the information on said insertion field and said selection field to create the print data which can be interpreted with said airline printer, and to transmit to an airline printer is included.

[0011]

[Embodiment of the Invention] With reference to a drawing, the gestalt of suitable operation of this invention is explained to a detail below [the 1st operation gestalt].

[0012] Drawing 1 is the block diagram showing the example of the printing structure of a system concerning this invention. In the printer 1000 of drawing 1, I/O204 receives the print data (henceforth, PDL data) described by the Page Description Language from a host computer 201. I/O207 receives the data (following and scan data or scanning image) from a scanner 202. The PDL analysis section 205 develops a bit map image data based on the PDL data which I/O204 received. Memory 206 saves the developed bit map image data. The scanner control section 208 receives data from a scanner 202 according to the request of the PDL analysis section 205, and writes data in memory 206. A control panel 1012 can perform a setup of various actuation which is in charge of printing. Those setup is also downloadable from a host computer 201. Printer engine 209 prints the created data.

[0013] Moreover, a host computer 201 performs the program loaded to RAM201d from the external storage which can remove media, such as (hard disk HD) 201b and CD-ROM drive201c. Thereby, a host computer performs the procedure which showed the whole itself and printing system with the flow chart controlled and mentioned later. I/O interface 201e is an interface for communicating with a printer 1000.

[0014] In addition, this operation gestalt explains taking the case of a laser beam printer as a printer 1000. First, the configuration of a suitable laser beam printer to apply this operation gestalt is explained with reference to drawing 2.

[0015] Drawing 2 is the sectional view having shown the configuration of the laser beam printer (henceforth LBP) by which this operation gestalt was applied. This LBP can register registration, fixed form format (form data), etc. of a character pattern from the source of data (un-illustrating). In addition, the airline printer of other printing methods, such as not only LBP but an ink jet method, may be used for the airline printer with which this operation gestalt is applied.

[0016] In drawing 2, the LBP body 1000 inputs and memorizes text (character code), form information, or macro instruction supplied from external devices, such as the host computer 201 connected to it. The character pattern which corresponds with it according to those information is created, and an image is formed in the record paper which is a record medium. A switch, an LED display, etc. for actuation are allotted to a control panel 1012, and the printer control unit 1001 analyzes the text supplied by control and the host of the LBP body 1000 whole. Text is changed into the corresponding video signal of a character pattern, and this printer control unit 1001 mainly outputs it to a laser driver 1002. A laser driver 1002 is a circuit for driving semiconductor laser 1003, and switches turning on and off of the laser beam 1004 discharged from semiconductor laser 1003 according to the inputted video signal. A laser

beam 1004 is a rotating polygon 1005, is shaken at a longitudinal direction and carries out actuation exposure of the electrostatic drum 1006 top. Thereby, the electrostatic latent image of a character pattern is formed on the electrostatic drum 1006. This latent image is developed by the development unit 1007 arranged in electrostatic drum 1006 perimeter, and is imprinted by the recording paper after that. A cut sheet is used for this recording paper, and the cut sheet recording paper is contained by the form cassette 1008 with which LBP1000 was equipped, is incorporated in equipment with the feed roller 1009 and the conveyance roller 1010, and the conveyance roller 1011, and is supplied to the electrostatic drum 1006.

[0017] Drawing 3 is an operations sequence flow chart in this operation gestalt, and is a flow chart which shows the operations sequence which compounds and prints scanning data and PDL data especially. Actuation of a printing system is explained referring to drawing 2 and drawing 3.

[0018] If edit of a document etc. is completed with a host computer and printing of the drawn-up document is directed, in a host computer 201, the created document data will be first changed into the PDL data which can be interpreted by the printer 1000. Then, into the PDL data created at step S801, an instruction of whether there is any page to which directions of the nest of scanning data are carried out, and the incorporation demand of the scanning data beforehand defined if it judged and was is matched with the specified page, and is incorporated. At the end, the created PDL data are transmitted to a printer 1000. The printer which received this data operates in the procedure of drawing 3. If a host computer 201 transmits printing data to a printer 1000, analysis of the printing data which I/O204 received (step S301) and were received in the PDL analysis section 205 etc. will be processed (step S302). The PDL analysis section 205 judges whether they are the directions with which printing data incorporate data from a scanner 202 (step S303). If the instruction for compounding scanning data to the page developed immediately before is detected in PDL data, it directs to read data in the appointed resolution (specified in PDL data), or the nearest resolution to the scanner control section 208. According to this, the scanner control section 208 develops the data which incorporated and (step S306) incorporated data in memory 206 from a scanner 202 through I/O207 (step S307).

[0019] When it is judged that there are no directions which incorporate data from a scanner 202 after step S307 or at step S303, the image data based on PDL data is developed in memory 206 (step S304). Under the present circumstances, the image generated from PDL data is piled up so that the image already developed by memory 206 may serve as a background.

[0020] If it judges whether the data for 1 page were assembled (step S305) and has not gathered in the phase which finished the above processing, processing is resumed from step S301, and if it has gathered, it will print (step S308).

[0021] In addition, in expansion of the scanner data in step S307, to scanner data, neither trim nor processings, such as a mask or variable power, are performed, but the read data are compounded by the image data developed from PDL data as it was.

[0022] As explained above, according to the PDL data sent from a host computer, the airline printer of this operation gestalt can read scanning data automatically, and can compound PDL data and scanning data within an airline printer. Therefore, the need of transmitting scanning data to a host computer from a scanner does not need to transmit scanning data to a printer from a host computer, either. For this reason, the communications traffic between a scanner 202 or a printer 1000 can be reduced. Thereby, in a Local Area Network etc., a host computer can prevent the contention at the time of using a network and a printer, especially when connecting with the printer through the communication network shared with other host computers or a peripheral device.

[0023] Moreover, since it is not necessary to compound an image with a host computer, a host computer can be used effectively.

[0024] Moreover, the instruction which compounds scanning data can direct composition of scanning data in a printer ***** sake to a desired page as some PDL instructions.

[0025] [the 2nd operation gestalt] -- the 1st operation gestalt showed the only compounded example to the data which developed the data incorporated from the scanner from PDL data. With this operation gestalt, the part incorporating scanning data is specified with PDL data.

[0026] Drawing 4 is drawing for explaining the difference between the 1st operation gestalt and the 2nd

operation gestalt. If data are compounded according to the 1st operation gestalt when compounding and printing the scanning data 400 and the PDL data 405, the image data to which the scanning data 400 were made into the background, and the PDL data 405 piled them up on it like complex data 410 will be created. Therefore, in the 1st operation gestalt, unnecessary data (drawing 4 parts other than field 401 in the scanning data 400) must not be in composition with PDL data in scanning data.

[0027] On the other hand, with this operation gestalt, the insertion field 406 which inserts the scanning data 405 in the image data developed from PDL data is specified with PDL data. In a printer, the selection field 401 which is a field of the scanning data corresponding to the insertion field 406 is developed by memory 206, the PDL data 405 are written in from on the, and complex data 412 is created.

[0028] Drawing 5 is the procedure by the printer for forming an image as mentioned above.

[0029] If a host computer 201 transmits printing data to a printer 1000, analysis of the printing data which I/O204 received (step S401) and were received in the PDL analysis section 205 etc. will be processed (step S402). The PDL analysis section 205 judges whether they are the directions with which printing data incorporate data from a scanner 202 (step S403). If the instruction for compounding scanning data to the page developed immediately before is detected in PDL data, it directs to read data in the appointed resolution (specified in PDL data), or the nearest resolution to the scanner control section 208. Moreover, the location (dx, dy) and size $x*y$ for pinpointing the field of the scanning data compounded which are related with the instruction for [said] compounding and are contained in PDL data are directed to the scanner control section 208 (step S406). The scanner control section 208 incorporates the data of the field specified from the scanner 202 through I/O207 (step S407), and develops the incorporated data in memory 206 (step S408). Here, the field specified from the scanned data may be cut off and you may develop in memory, and only the specified field may be scanned as long as a scanner is possible structural.

[0030] Drawing 6 shows the example of the image with which the scanning data 501 and the PDL data 502 were compounded. The insertion field 503 is specified by the coordinate (dx, dy) of the upper left hand corner showing the location, and the die length x of the width showing the size and vertical die-length y in drawing 6 . From the scanning data 501, the selection field 504 corresponding to the insertion field 503 is cut off, and it is compounded by the PDL data 502.

[0031] When it is judged that there are no directions which incorporate data from a scanner 202 after step S408 or at step S403, the image data based on PDL data is developed in memory 206 (step S404). Under the present circumstances, the image generated from PDL data is piled up so that the scanning data already developed by memory 206 may serve as a background.

[0032] If it judges whether the data for 1 page were assembled (step S405) and has not gathered in the phase which finished the above processing, processing is resumed from step S301, and if it has gathered, it will print (step S409).

[0033] If this operation gestalt is used as explained above, the same effectiveness as the 1st operation gestalt will be acquired. Since an insertion field is correctly directed with PDL data in addition to it, even if the image unnecessary for merge is contained in scanning data, only required scanning data are compounded with PDL data.

[0034] [the 3rd operation gestalt] -- scanning data can transmit the scanning data which LBP1000 received to a host computer, and although transmitted to LBP1000, they can also constitute them from the 1st and 2nd operation gestalten so that the outline of scanning data can be previewed on a host computer. Furthermore, it can also be directed which scanning data are assigned based on the scanning data previewed on the host computer 201 for every insertion field which inserts the scanning data beforehand specified in PDL data.

[0035] Drawing 7 is the block diagram showing the example of the printing structure of a system to which this operation gestalt was applied. In addition, the same reference mark is given to the block which has the same function as the 1st and drawing 1 in the 2nd operation gestalt. I/O507 will send data to both the scanner control section 208 and the host computer 201, if data are received from a scanner 202. A host computer 201 thins out a dot from the received scanning data, and displays scanning data on

the screen of a host computer by the preview function. Or I/O507 thins out a dot from scanning data according to the display capabilities of a host computer, and may transmit to a host computer.

[0036] LBP [in / in drawing 8 / this operation gestalt]1000, and a host computer 201 -- it is the flow chart which shows each operations sequence. Step S600 - step S613 show the procedure in LBP1000, and step S650 - step S653 show the procedure in a host computer 201.

[0037] The operations sequence within LBP1000 is explained first. If LBP1000 receives the PDL data transmitted from the host computer 201 by I/O204 (step S600), PDL data will be processed in the PDL analysis section 205 (step S601), and PDL data will be developed on memory 206 (step S602).

[0038] Incorporation of the data of a scanner 202 is directed that the PDL analysis section 205 detects the instruction which directs composition with the data and the scanning data which were developed to the scanner control section 208 (YES of step S603). The scanner control section 208 to which incorporation was directed incorporates scanning data through I/O507 (step S610). Resolution when incorporating scanning data is made into the value already specified in the PDL analysis section 205, and when it cannot incorporate in the specified resolution, it is performed in the resolution nearest to the specified resolution. The scanning data incorporated by coincidence are transmitted also to a host computer 201 from I/O507 (step S611). If it is made to transmit at this time after lowering the resolution of scanning data according to the display resolution of a preview function, the amount of data of transmit data can be reduced. The arrow head of the dotted line which is going before step S611 to the step S650 in drawing 6 shows that the scanning data incorporated at step S610 are transmitted.

[0039] Then, the scanner control section 208 receives the information which shows the location of the selection field in scanning data to the insertion field assigned with PDL data from a host computer 201 (step S612). The contents of the selection field directed to the insertion field of the image based on the PDL data developed by memory 206 in scanning data at step S602 are written in, and composition of PDL data and scanning data is performed (step S613).

[0040] On the other hand, when [which was not] the directions which incorporate data from a scanner 202 are detected at step S603, it progresses to step S604.

[0041] It judges whether the data for 1 page were assembled, and at step S604, if it has not gathered, processing is resumed from step S600, and if it has gathered, it will print by progressing to step S605.

[0042] Next, the operations sequence in a host computer 201 is explained. A host computer 201 receives the scanning data which were transmitted by step S611 of LBP1000 and which were operated on a curtailed schedule (step S650), and carries out a screen display of the received data (step S651). The selection field of scanning data is directed by the operator on this display screen. According to these directions, the selection field of scanning data is assigned for every insertion field of PDL data (step S652). These results are notified to LBP1000 (step S653). The arrow head of the dotted line which is going before step S653 to the step S612 in drawing 6 shows that the result assigned at step S652 is transmitted to LBP1000.

[0043] In addition, since the insertion field of scanning data is beforehand specified in PDL data, at step S611, the identifier of an insertion field and each size may be transmitted to a host computer with scanning data.

[0044] Drawing 9 is the example of the preview screen in a host computer. The frame 610 equivalent to the size of the insertion field received from the printer is expressed as a host computer on the preview screen 607. And an operator operates the migration carbon button 611, moves this frame 610, and specifies the selection field compounded by PDL data.

[0045] Moreover, there may be two or more insertion fields specified in PDL data. In this case, at step S652, the identifier of an insertion field and the selection field of scanning data are matched and assigned, and that result is transmitted to a printer 1000.

[0046] If this operation gestalt is used as explained above, composition and printing of the scanning data which a user desires with a field and PDL data can be performed. Moreover, assignment of the field of scanning data is moving the frame of the size equivalent to the field specified by PDL data on a preview screen, and is *****. For this reason, assignment of a desired field can carry out very easily.

[0047] In addition, it can also constitute so that scanning data may be transmitted to a host computer

201, without lowering resolution, a host computer 201 may lower resolution at step S650 and scanning data may be received at step S611.

[0048] With the gestalt of [operation gestalt of ** 4th] the 2nd operation, the location of the insertion field specified by PDL and the location of the selection field of the scanner data compounded there corresponded. Moreover, with the gestalt of the 3rd operation, the size of the insertion field specified by PDL was equivalent to the size of the selection field of the scanner data compounded. An operator is made to also specify the location and size of an insertion field in PDL data with the gestalt of this operation in addition to the function which previews the data of a scanner 202 to a host computer 201. After these assignment ends, a host computer 201 creates PDL data and transmits them to a printer 1000. The system of this operation gestalt is the same as that of the configuration shown in drawing 7.

[0049] This operation gestalt is explained referring to drawing 7 and drawing 10 - drawing 15.

[0050] First, the processing on a host computer 201 is explained according to the flow chart of drawing 10. A user draws up a document etc. using a predetermined application program. The user adds the size and the location of the instruction of a purport to insert scanning data in, and an insertion field to the page of a request of this document. It depends for this actuation on the application which draws up a document.

[0051] A printer driver will be started if a printing demand is advanced. The procedure of drawing 10 shows actuation of the printer driver after this. First, it judges whether a printer driver has a scanning merge instruction in the created document data (step S1001). When it is judged that there is nothing, selection of the carbon button of scanning relation, such as the scanning data insertion point carbon button 603 and the scanning data preview carbon button 604, of the screen (it is called a printer driver window) shown in drawing 11 is made impossible, and the printer driver window 602 is displayed on the monitor 601 of a host computer 201 (step S1002).

[0052] On the other hand, when the synthetic instruction of scanning data is detected, the printer driver window 602 is displayed, using the above-mentioned scanning relation carbon button as selectable (step S1003).

[0053] Then, it waits until an operator operates the carbon button of either of the displayed windows (step S1004). If one of carbon buttons is pushed, it will progress to step S1005 and will judge [which carbon button was pushed and].

[0054] When the scanning data preview carbon button 604 is pushed, it progresses to step S1006. First, to a scanner 202, loading of a manuscript image is required, and a scanner reads in response to it and receives the image data which transmitted (step S1006). A printer driver displays the image data which received as a preview window 607 of drawing 12 (step S1007). An operator looks at this screen and operates it using the frame migration carbon button 611 etc. According to this actuation, the selection frame 610 in which a selection field is shown is moved, and while recording that location, it displays (step S1008).

[0055] When the scanning data insertion point carbon button 603 is pushed, the insertion point window 606 is displayed (step S1009). In this window, a frame 609 is displayed based on the synthetic part of the scanning data set as document data [finishing / creation].

[0056] When the print preview carbon button 605 is pushed, a non-illustrated printing preview window is displayed (step S1011). However, nothing is displayed into an insertion field. And it judges whether the preview of scanning data was performed about the page currently displayed (step S1012). If carried out, from the image data which received from the scanner in step S1006, the interior of the selection frame set up at step S1008 will be started, and it will be compounded and displayed on an insertion field (step S1013).

[0057] Moreover, when a print button 605 is pushed, document data [finishing / creation], the location of an insertion field and size which are set up, and the location and size of a selection field corresponding to it are changed into PDL data at the time, and it transmits to a printer 1000 (step S1014).

[0058] Drawing 13 is the flow chart of actuation of the printer 1000 of which reading of image data was required by step S1006 of drawing 10. First, a manuscript image is made to scan with a scanner 202

(step S1301). And the obtained image data is saved in memory 206 (step S1302), and it transmits to a host computer 201 in the resolution which had the image data specified (step S1304).

[0059] Drawing 14 shows actuation by the printer 1000 which received the PDL data transmitted after step S1014 of drawing 10.

[0060] Reception of PDL data processes analyzing the data etc. (step S1402). (step S1401) And it judges whether the instruction which directs composition of scanner data is included in the PDL data (step S1403). When contained, the location (dx1, dy1) which shows the selection field of PDL data to scanning data, and size x*y are obtained (step S1407). And the scanning data equivalent to a location (dx1, dy1) and the selection field of size x*y are read (step S1408). Under the present circumstances, if scanning data are already read for the preview display, it will not scan anew. In this case, the selection field set up is started from the data saved at step S1302 of drawing 13. If the preview is not performed, it will scan here and a manuscript image will be read.

[0061] The selection field of the read scanning data is developed in the location (dx2, dy2) of the set-up insertion field (step S1409).

[0062] When it is judged that there are no directions of composition of scanning data in step S1403, after step S1409, it develops in memory 206 based on PDL data at a dot image data (step S1405). At this time, a dot image data is developed so that the data which are already in memory 206 may be made into a background. Therefore, if scanning data are already stored in memory 206 at step S1409, it will be made into a background and an image will be compounded. In this way, if 1-page data are obtained (step S1406- YES), printing will be performed in step S1410.

[0063] Drawing 15 is drawing showing an example of the scanner data compounded in an above-mentioned procedure, and PDL data. In drawing 15, the image in the selection field set up on the data 901 read with the scan is compounded by the insertion field of the PDL data 902.

[0064] A selection field can be freely set up into scanning data on the screen of a host computer as mentioned above. Since this setup can be performed looking at the preview of scanning data, the partial image which a user desires can be chosen correctly and the selected part can be compounded in images, such as a document expressed by PDL data. For this reason, it is not necessary to carry out location ***** of the selection field in the manuscript image scanned correctly beforehand to the insertion field of the scanning data in the printed matter which it is finally going to output. Moreover, since composition is performed in a printer, the processing load in a host computer is mitigable.

[0065] Furthermore, to perform the preview display of scanning data, it is necessary to transmit image data to a host computer from a scanner. In this case, the image data thinned out and carried out according to the display screen is enough as the image data transmitted. Moreover, it is not necessary to transmit scanning data to a printer from a host computer. For this reason, the image data sent out on a network is small data, and does not increase communicative traffic.

[0066] In addition, it is made to perform actuation of being as add **** [, and]. [moving the insertion frame 609 in which an insertion field is shown after step S1009 of drawing 10] [changing the size] In that case, the instruction according to these actuation is added also to the PDL data created at step S1014 with migration and an addition of an insertion frame. Moreover, when the size of the insertion frame 609 is changed, the size of the selection frame 610 is also changed according to it.

[0067] [the 5th operation gestalt] -- although it was determined with the 3rd and 4th operation gestalt whether have scanned at the time of the PDL data origination before the printer driver window 602 is started, it can make it possible to compound scanning data, after starting the printer driver window 602

[0068] According to the flow chart of drawing 16, the configuration procedure of the selection field in this operation gestalt is explained, referring to drawing 17. In addition, the structure of a system is the same as that of the gestalt of the 1st thru/or the 4th operation.

[0069] First, the processing on a host computer 201 is explained according to the flow chart of drawing 16. The processing in a printer is the same as that of drawing 13 of the 4th operation gestalt, and drawing 14. A user draws up a document etc. using a predetermined application program. The user adds the size and the location of the instruction of a purport to insert scanning data in, and an insertion field to the page of a request of this document. It depends for this actuation on the application which draws up a

document.

[0070] A printer driver will be started if a printing demand is advanced. The procedure of drawing 16 shows actuation of the printer driver after this. First, among the screens shown in drawing 17, a printer driver changes the scanning data incorporation carbon button 10001 into a selectable condition, and displays the printer driver window 602 (step S1601).

[0071] Then, it waits until an operator operates the carbon button of either of the displayed screens (step S1602). If one of carbon buttons is pushed, it will progress to step S1603 and will judge [which carbon button was pushed and].

[0072] When the scanning data incorporation carbon button 604 is pushed, it progresses to step S1604. First, to a scanner 202, loading of a manuscript image is required, and a scanner reads in response to it and receives the image data which transmitted (step S1604). A printer driver displays the image data which received as a preview window 607 of drawing 17 (step S1605). An operator looks at this screen and operates it using the frame migration carbon button 611 etc. According to this actuation, the selection frame 610 in which a selection field is shown is moved, and while recording that location, it displays (step S1606).

[0073] When the scanning data insertion point carbon button 603 (hidden in drawing 17) is pushed, the insertion point window 606 is displayed (step S1607). In this screen, the insertion frame 609 is displayed based on the synthetic part of the scanning data set as document data [finishing / creation].

[0074] When the print preview carbon button 605 is pushed, a non-illustrated print preview screen is displayed (step S1609). However, nothing is displayed into an insertion field. And it judges whether the preview of scanning data was performed about the page currently displayed (step S1610). If carried out, from the image data which received from the scanner in step S1604, the interior of the selection frame set up at step S1606 will be started, and it will be compounded and displayed on an insertion field (step S1611).

[0075] Moreover, when a print button 605 is pushed, document data [finishing / creation], the location of an insertion field and size which are set up, and the location and size of a selection field corresponding to it are changed into PDL data at the time, and it transmits to a printer 1000 (step S1612).

[0076] In addition, when a scanning data incorporation carbon button is not pushed, PDL data are generated so that the field of the location corresponding to the insertion field of the scanning data defined in document data and size may be made into a selection field.

[0077] With the above procedure, the same operation effectiveness as the 4th operation gestalt can be acquired. Furthermore, even if an operator does not choose a selection field anew, the field on the scanning data corresponding to an insertion field is chosen as a selection field. For this reason, an operator can exclude the decision of the location of a selection field.

[0078] The field of the scanning data assigned with the insertion field in the [6th operation gestalt] and 3rd, and 4th operation gestalt When it is judged that a comparison means to compare magnitude with a (following and quota field) is established, and area size changes with comparison means, The warning message which tells that area size differs may be sent, processing may be stopped by error, or the function which can carry out enlarging or contracting of the quota field automatically, and can be doubled with an insertion field may be prepared. At this time, the change of whether warning and an error message are sent or to perform expansion/contraction automatically can be set up from a control panel 1012 or a host computer.

[0079] With the 3rd and 4th operation gestalten, the size of a selection field was determined according to the size of an insertion field, and an operator was not able to change it. However, with this operation gestalt, not only the location of a selection field but size can be changed in step S1008 of drawing 10, and step S1606 of drawing 16. The example in which size was automatically changed into drawing 18 is shown. In the case of drawing 18, the selection field on scanning data is the image 1801 whole. On the other hand, the insertion field 1803 defined on the PDL data 1802 is a field smaller than it. In this case, it is reduced and an image 1801 is compounded by the insertion field 1803. Therefore, at step S1014 of drawing 10, and step S1612 of drawing 16, into PDL data, the image in the selection field of

scanning data is set by the size of an insertion field, and expansion / instruction made to reduce also incorporates it. A printer 1000 interprets this instruction, expands / reduces scanning data, and compounds them with PDL data.

[0080] Before printing if this operation gestalt is used as explained above, it can know that the fields of the scanning data which a user uses for composition, and PDL data differ by an error or the warning message, and suitable measures can be taken.

[0081] Since enlarging or contracting of scanning data can be carried out automatically and the image in a selection field can also be set by the size of an insertion field, scanning data are expanded beforehand or it becomes unnecessary moreover, to reduce.

[0082] In [various modification] above-mentioned each operation gestalt, although the resolution of a scanner was beforehand set up by PDL1000, the scanner control section 208 asks a control panel 1012 the resolution of a printer, and it can incorporate data from a scanner 202 in the resolution inputted as a result. When it cannot carry out in the obtained resolution, it is the resolution nearest to it and data are incorporated from a scanner 202.

[0083] Moreover, with each above-mentioned operation gestalt, although the insertion field was beforehand specified in PDL data, also when a certain data already exist in the specified PDL data, it thinks. When such, you may enable it to specify either with a control panel 1012 or a host computer 201 from two methods of whether priority is given to PDL data, or priority is given to scanning data.

[0084] Drawing 19 is drawing which illustrated the data compounded according to this operation gestalt. The case where selection field 1901a in the scanner data 1901 is compounded with insertion field 1902a in the PDL data 1902 is considered. In this case, in order to develop scanning data priority, i.e., PDL data, as a dot image data previously and to pile up scanning data on it, it becomes like an image 1903. If it says by drawing 14 in order to carry out like this, not to develop the PDL data of step S1405 after step S1409, but what is necessary is just made to carry out between step S1402 and step S1403.

[0085] Moreover, since it is thought that priority is given to PDL data, the gestalt of the above 3rd and the 4th implementation should just develop PDL data after expansion of scanning data like drawing 14 , when it gives priority to PDL data.

[0086] Moreover, in order to change these, to process as drawing 14 , if the value of the flag is 1, and if it is 0, not to develop the PDL data of step S1405 after step S1409, but what is necessary is made to form the flag which changes a value according to actuation of an operator or the directions from a host computer, and just to carry out between step S1402 and step S1403.

[0087] Furthermore, priority cannot be given to either and the overlapping image can also be put in order in piles. Drawing 20 is drawing showing the example which compounds the PDL data 700 and the scanning data 705. If priority is given to scanning data, a certain image will already be outputted to the insertion field 701 of PDL data like an image 720. If priority is given to PDL data, the image in the selection field 706 of scanning data will be outputted like an image 710. If composition is chosen, both images will be set [they pile them up and] and outputted like an image 730. A user can also be made to specify the operation for piling up two images by the approach of this last. For example, the value of each corresponding pixel can be added, or if it is a binary image, an OR, an exclusive OR, etc. can be chosen. Even when PDL data are already in the field of the PDL data which insert scanning data by doing in this way, it can adjust on an airline printer.

[0088] Moreover, with an above-mentioned operation gestalt, although composition with scanning data and PDL data has been explained, even if the data compounded are image data other than scanning data, this operation gestalt is applicable.

[0089] Moreover, all the operation gestalten mentioned above were the systems by which the printer and the scanner became independent. However, the technique of image composition explained in each above-mentioned example is applicable to the system which connected with the host computer the digital compound machine which can be used as a copying machine, facsimile or a scanner, and a printer simple substance including a scanner and a printer.

[0090]

[Other operation gestalten] In addition, even if it applies this invention to the system which consists of

two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device.

[0091] Moreover, the purpose of this invention supplies the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and is attained also by carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage.

[0092] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0093] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0094] Moreover, by performing the program code which the computer read, a part or all of processing that OS (operating system) which the function of the operation gestalt mentioned above is not only realized, but is working on a computer based on directions of the program code is actual is performed, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained.

[0095] Furthermore, after the program code read from the storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or the computer is equipped, a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped is actual performs, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained based on directions of the program code.

[0096]

[Effect of the Invention] As explained above, according to this invention, according to PDL data, scanning data can be read automatically and PDL data and scanning data can be compounded within an airline printer. Therefore, the need of transmitting scanning data to a host computer from a scanner does not need to transmit scanning data to a printer from a host computer, either. For this reason, the communications traffic of network top ** can be reduced.

[0097] Moreover, since it is not necessary to compound an image with a host computer, a host computer can be used effectively.

[0098] Moreover, the instruction which compounds scanning data can direct composition of scanning data in a printer ***** sake to a desired page as some PDL instructions.

[0099] Moreover, since an insertion field is correctly directed with PDL data, even if the image unnecessary for merge is contained in scanning data, only required scanning data are compounded with PDL data.

[0100] Moreover, composition and printing of the scanning data which a user desires with a field and PDL data can be performed. Moreover, assignment of the field of scanning data is moving the frame of the size equivalent to the field specified by PDL data on a preview screen, and is ***** . For this reason, assignment of a desired field can carry out very easily.

[0101] Moreover, a selection field can be freely set up into scanning data on the screen of a host computer. Since this setup can be performed looking at the preview of scanning data, the partial image which a user desires can be chosen correctly and the selected part can be compounded in images, such as a document expressed by PDL data.

[0102] Moreover, since it is not necessary to transmit scanning data to a printer from a host computer even if it is the case where scanning data are previewed, the image data sent out on a network is small data, and does not increase communicative traffic.

[0103] Furthermore, even if an operator does not choose a selection field anew, the field on the scanning data corresponding to an insertion field is chosen as a selection field. For this reason, an operator can exclude the decision of the location of a selection field.

[0104] Moreover, before printing, it can know that the fields of the scanning data which a user uses for composition, and PDL data differ by an error or the warning message, and suitable measures can be taken.

[0105] Since enlarging or contracting of scanning data can be carried out automatically and the image in a selection field can also be set by the size of an insertion field, scanning data are expanded beforehand or it becomes unnecessary moreover, to reduce.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the information processors which control the airline printer and it which compound and print the image read from the scanner etc., and the image created based on print data, and those control approaches.

[0002]

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PRIOR ART

[Description of the Prior Art] When printing conventionally the image containing the image data incorporated with the scanner, and the print data described by PDL (Page Description Language) transmitted from a host computer, image data once needed to be incorporated from the scanner to the host computer, the image data and PDL data needed to be compounded, and the printer needed to be made to transmit and print the data.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, according to PDL data, scanning data can be read automatically and PDL data and scanning data can be compounded within an airline printer. Therefore, the need of transmitting scanning data to a host computer from a scanner does not need to transmit scanning data to a printer from a host computer, either. For this reason, the communications traffic of network top ** can be reduced.

[0097] Moreover, since it is not necessary to compound an image with a host computer, a host computer can be used effectively.

[0098] Moreover, the instruction which compounds scanning data can direct composition of scanning data in a printer ***** sake to a desired page as some PDL instructions.

[0099] Moreover, since an insertion field is correctly directed with PDL data, even if the image unnecessary for merge is contained in scanning data, only required scanning data are compounded with PDL data.

[0100] Moreover, composition and printing of the scanning data which a user desires with a field and PDL data can be performed. Moreover, assignment of the field of scanning data is moving the frame of the size equivalent to the field specified by PDL data on a preview screen, and is ***** For this reason, assignment of a desired field can carry out very easily.

[0101] Moreover, a selection field can be freely set up into scanning data on the screen of a host computer. Since this setup can be performed looking at the preview of scanning data, the partial image which a user desires can be chosen correctly and the selected part can be compounded in images, such as a document expressed by PDL data.

[0102] Moreover, since it is not necessary to transmit scanning data to a printer from a host computer even if it is the case where scanning data are previewed, the image data sent out on a network is small data, and does not increase communicative traffic.

[0103] Furthermore, even if an operator does not choose a selection field anew, the field on the scanning data corresponding to an insertion field is chosen as a selection field. For this reason, an operator can exclude the decision of the location of a selection field.

[0104] Moreover, before printing, it can know that the fields of the scanning data which a user uses for composition, and PDL data differ by an error or the warning message, and suitable measures can be taken.

[0105] Since enlarging or contracting of scanning data can be carried out automatically and the image in a selection field can also be set by the size of an insertion field, scanning data are expanded beforehand or it becomes unnecessary moreover, to reduce.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, if the size of the data read with a scanner is large when the scanner and the host computer are connected through the network, a high load will be covered over a network. Moreover, a lot of memory for storing image data was needed for the host computer, and there were problems, like data processing in a host computer takes time amount.

[0004] This invention is made in view of the above technical problem, incorporates image data according to the directions included in print data, and aims at offering the information processors which send print data, and those control approaches to the airline printer and this airline printer which compound and output the image data and print data.

[0005] Furthermore, it aims at offering the information processors which send print data, and those control approaches to the airline printer and this airline printer which can compound print data and the read image data by the method of desired composition by including the directions about a trim and the synthetic location of print data and the image data compounded in print data, and transmitting to an airline printer.

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention builds the instruction of the purport which compounds the image read from the scanner into the print data transmitted to a printer from host equipment, performs the instruction by the printer, and makes print data and scanner data compound. In that case, the image read from the scanner is transmitted to host equipment, and indicates by preview in host equipment. And an operator is made to choose the field which should be included in the image formed from print data on a preview display screen.

[0007] Moreover, other configurations for this invention to attain are as follows.

[0008] That is, it has a detection means to detect the instruction which directs composition with these print data and image data out of the print data transmitted from the external device, an incorporation means to incorporate image data if said instruction is detected by said detection means, and the image obtained based on said print data in the image data incorporated by said incorporation means and a synthetic means to compound.

[0009] Or a data transmitting means to transmit print data including the instruction which directs the insertion field which is the information processor connected with the airline printer which can take in image data from a scanner, and inserts image data to said airline printer, A receiving means to receive the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, A display means to display the image data received by said receiving means, Based on the image data displayed by said display means, an image data directions means to direct the image data inserted in said insertion field, and a transmitting means to transmit the result depended on said directions means to said airline printer are included.

[0010] Or connected with the airline printer which can take in image data from a scanner. A reading means to be the information processor which can create document data and to read image data from a scanner through said airline printer according to the information on the insertion field which was included in document data and which should insert image data, An image data directions means to direct the selection field which shows the field of the image data inserted in said document data based on the image data displayed by display means to display the read image data, and said display means, Based on said document data, said insertion field, and said selection field, a print-data creation means including the information on said insertion field and said selection field to create the print data which can be interpreted with said airline printer, and to transmit to an airline printer is included.

[0011]

[Embodiment of the Invention] With reference to a drawing, the gestalt of suitable operation of this invention is explained to a detail below [the 1st operation gestalt].

[0012] Drawing 1 is the block diagram showing the example of the printing structure of a system concerning this invention. In the printer 1000 of drawing 1, I/O204 receives the print data (henceforth, PDL data) described by the Page Description Language from a host computer 201. I/O207 receives the data (following and scan data or scanning image) from a scanner 202. The PDL analysis section 205 develops a bit map image data based on the PDL data which I/O204 received. Memory 206 saves the developed bit map image data. The scanner control section 208 receives data from a scanner 202

according to the request of the PDL analysis section 205, and writes data in memory 206. A control panel 1012 can perform a setup of various actuation which is in charge of printing. Those setup is also downloadable from a host computer 201. Printer engine 209 prints the created data.

[0013] Moreover, a host computer 201 performs the program loaded to RAM201d from the external storage which can remove media, such as (hard disk HD) 201b and CD-ROM drive201c. Thereby, a host computer performs the procedure which showed the whole itself and printing system with the flow chart controlled and mentioned later. I/O interface 201e is an interface for communicating with a printer 1000.

[0014] In addition, this operation gestalt explains taking the case of a laser beam printer as a printer 1000. First, the configuration of a suitable laser beam printer to apply this operation gestalt is explained with reference to drawing 2.

[0015] Drawing 2 is the sectional view having shown the configuration of the laser beam printer (henceforth LBP) by which this operation gestalt was applied. This LBP can register registration, fixed form format (form data), etc. of a character pattern from the source of data (un-illustrating). In addition, the airline printer of other printing methods, such as not only LBP but an ink jet method, may be used for the airline printer with which this operation gestalt is applied.

[0016] In drawing 2, the LBP body 1000 inputs and memorizes text (character code), form information, or macro instruction supplied from external devices, such as the host computer 201 connected to it. The character pattern which corresponds with it according to those information is created, and an image is formed in the record paper which is a record medium. A switch, an LED display, etc. for actuation are allotted to a control panel 1012, and the printer control unit 1001 analyzes the text supplied by control and the host of the LBP body 1000 whole. Text is changed into the corresponding video signal of a character pattern, and this printer control unit 1001 mainly outputs it to a laser driver 1002. A laser driver 1002 is a circuit for driving semiconductor laser 1003, and switches turning on and off of the laser beam 1004 discharged from semiconductor laser 1003 according to the inputted video signal. A laser beam 1004 is a rotating polygon 1005, is shaken at a longitudinal direction and carries out actuation exposure of the electrostatic drum 1006 top. Thereby, the electrostatic latent image of a character pattern is formed on the electrostatic drum 1006. This latent image is developed by the development unit 1007 arranged in electrostatic drum 1006 perimeter, and is imprinted by the recording paper after that. A cut sheet is used for this recording paper, and the cut sheet recording paper is contained by the form cassette 1008 with which LBP1000 was equipped, is incorporated in equipment with the feed roller 1009 and the conveyance roller 1010, and the conveyance roller 1011, and is supplied to the electrostatic drum 1006.

[0017] Drawing 3 is an operations sequence flow chart in this operation gestalt, and is a flow chart which shows the operations sequence which compounds and prints scanning data and PDL data especially. Actuation of a printing system is explained referring to drawing 2 and drawing 3.

[0018] If edit of a document etc. is completed with a host computer and printing of the drawn-up document is directed, in a host computer 201, the created document data will be first changed into the PDL data which can be interpreted by the printer 1000. Then, into the PDL data created at step S801, an instruction of whether there is any page to which directions of the nest of scanning data are carried out, and the incorporation demand of the scanning data beforehand defined if it judged and was is matched with the specified page, and is incorporated. At the end, the created PDL data are transmitted to a printer 1000. The printer which received this data operates in the procedure of drawing 3. If a host computer 201 transmits printing data to a printer 1000, analysis of the printing data which I/O204 received (step S301) and were received in the PDL analysis section 205 etc. will be processed (step S302). The PDL analysis section 205 judges whether they are the directions with which printing data incorporate data from a scanner 202 (step S303). If the instruction for compounding scanning data to the page developed immediately before is detected in PDL data, it directs to read data in the appointed resolution (specified in PDL data), or the nearest resolution to the scanner control section 208. According to this, the scanner control section 208 develops the data which incorporated and (step S306) incorporated data in memory 206 from a scanner 202 through I/O207 (step S307).

[0019] When it is judged that there are no directions which incorporate data from a scanner 202 after

step S307 or at step S303, the image data based on PDL data is developed in memory 206 (step S304). Under the present circumstances, the image generated from PDL data is piled up so that the image already developed by memory 206 may serve as a background.

[0020] If it judges whether the data for 1 page were assembled (step S305) and has not gathered in the phase which finished the above processing, processing is resumed from step S301, and if it has gathered, it will print (step S308).

[0021] In addition, in expansion of the scanner data in step S307, to scanner data, neither trim nor processings, such as a mask or variable power, are performed, but the read data are compounded by the image data developed from PDL data as it was.

[0022] As explained above, according to the PDL data sent from a host computer, the airline printer of this operation gestalt can read scanning data automatically, and can compound PDL data and scanning data within an airline printer. Therefore, the need of transmitting scanning data to a host computer from a scanner does not need to transmit scanning data to a printer from a host computer, either. For this reason, the communications traffic between a scanner 202 or a printer 1000 can be reduced. Thereby, in a Local Area Network etc., a host computer can prevent the contention at the time of using a network and a printer, especially when connecting with the printer through the communication network shared with other host computers or a peripheral device.

[0023] Moreover, since it is not necessary to compound an image with a host computer, a host computer can be used effectively.

[0024] Moreover, the instruction which compounds scanning data can direct composition of scanning data in a printer ***** sake to a desired page as some PDL instructions.

[0025] [the 2nd operation gestalt] -- the 1st operation gestalt showed the only compounded example to the data which developed the data incorporated from the scanner from PDL data. With this operation gestalt, the part incorporating scanning data is specified with PDL data.

[0026] Drawing 4 is drawing for explaining the difference between the 1st operation gestalt and the 2nd operation gestalt. If data are compounded according to the 1st operation gestalt when compounding and printing the scanning data 400 and the PDL data 405, the image data to which the scanning data 400 were made into the background, and the PDL data 405 piled them up on it like complex data 410 will be created. Therefore, in the 1st operation gestalt, unnecessary data (drawing 4 parts other than field 401 in the scanning data 400) must not be in composition with PDL data in scanning data.

[0027] On the other hand, with this operation gestalt, the insertion field 406 which inserts the scanning data 405 in the image data developed from PDL data is specified with PDL data. In a printer, the selection field 401 which is a field of the scanning data corresponding to the insertion field 406 is developed by memory 206, the PDL data 405 are written in from on the, and complex data 412 is created.

[0028] Drawing 5 is the procedure by the printer for forming an image as mentioned above.

[0029] If a host computer 201 transmits printing data to a printer 1000, analysis of the printing data which I/O204 received (step S401) and were received in the PDL analysis section 205 etc. will be processed (step S402). The PDL analysis section 205 judges whether they are the directions with which printing data incorporate data from a scanner 202 (step S403). If the instruction for compounding scanning data to the page developed immediately before is detected in PDL data, it directs to read data in the appointed resolution (specified in PDL data), or the nearest resolution to the scanner control section 208. Moreover, the location (dx, dy) and size x*y for pinpointing the field of the scanning data compounded which are related with the instruction for [said] compounding and are contained in PDL data are directed to the scanner control section 208 (step S406). The scanner control section 208 incorporates the data of the field specified from the scanner 202 through I/O207 (step S407), and develops the incorporated data in memory 206 (step S408). Here, the field specified from the scanned data may be cut off and you may develop in memory, and only the specified field may be scanned as long as a scanner is possible structural.

[0030] Drawing 6 shows the example of the image with which the scanning data 501 and the PDL data 502 were compounded. The insertion field 503 is specified by the coordinate (dx, dy) of the upper left

hand corner showing the location, and the die length x of the width showing the size and vertical die-length y in drawing 6 . From the scanning data 501, the selection field 504 corresponding to the insertion field 503 is cut off, and it is compounded by the PDL data 502.

[0031] When it is judged that there are no directions which incorporate data from a scanner 202 after step S408 or at step S403, the image data based on PDL data is developed in memory 206 (step S404). Under the present circumstances, the image generated from PDL data is piled up so that the scanning data already developed by memory 206 may serve as a background.

[0032] If it judges whether the data for 1 page were assembled (step S405) and has not gathered in the phase which finished the above processing, processing is resumed from step S301, and if it has gathered, it will print (step S409).

[0033] If this operation gestalt is used as explained above, the same effectiveness as the 1st operation gestalt will be acquired. Since an insertion field is correctly directed with PDL data in addition to it, even if the image unnecessary for merge is contained in scanning data, only required scanning data are compounded with PDL data.

[0034] [the 3rd operation gestalt] -- scanning data can transmit the scanning data which LBP1000 received to a host computer, and although transmitted to LBP1000, they can also constitute them from the 1st and 2nd operation gestalten so that the outline of scanning data can be previewed on a host computer. Furthermore, it can also be directed which scanning data are assigned based on the scanning data previewed on the host computer 201 for every insertion field which inserts the scanning data beforehand specified in PDL data.

[0035] Drawing 7 is the block diagram showing the example of the printing structure of a system to which this operation gestalt was applied. In addition, the same reference mark is given to the block which has the same function as the 1st and drawing 1 in the 2nd operation gestalt. I/O507 will send data to both the scanner control section 208 and the host computer 201, if data are received from a scanner 202. A host computer 201 thins out a dot from the received scanning data, and displays scanning data on the screen of a host computer by the preview function. Or I/O507 thins out a dot from scanning data according to the display capabilities of a host computer, and may transmit to a host computer.

[0036] LBP [in / in drawing 8 / this operation gestalt]1000, and a host computer 201 -- it is the flow chart which shows each operations sequence. Step S600 - step S613 show the procedure in LBP1000, and step S650 - step S653 show the procedure in a host computer 201.

[0037] The operations sequence within LPB1000 is explained first. If LBP1000 receives the PDL data transmitted from the host computer 201 by I/O204 (step S600), PDL data will be processed in the PDL analysis section 205 (step S601), and PDL data will be developed on memory 206 (step S602).

[0038] Incorporation of the data of a scanner 202 is directed that the PDL analysis section 205 detects the instruction which directs composition with the data and the scanning data which were developed to the scanner control section 208 (YES of step S603). The scanner control section 208 to which incorporation was directed incorporates scanning data through I/O507 (step S610). Resolution when incorporating scanning data is made into the value already specified in the PDL analysis section 205, and when it cannot incorporate in the specified resolution, it is performed in the resolution nearest to the specified resolution. The scanning data incorporated by coincidence are transmitted also to a host computer 201 from I/O507 (step S611). If it is made to transmit at this time after lowering the resolution of scanning data according to the display resolution of a preview function, the amount of data of transmit data can be reduced. The arrow head of the dotted line which is going before step S611 to the step S650 in drawing 6 shows that the scanning data incorporated at step S610 are transmitted.

[0039] Then, the scanner control section 208 receives the information which shows the location of the selection field in scanning data to the insertion field assigned with PDL data from a host computer 201 (step S612). The contents of the selection field directed to the insertion field of the image based on the PDL data developed by memory 206 in scanning data at step S602 are written in, and composition of PDL data and scanning data is performed (step S613).

[0040] On the other hand, when [which was not] the directions which incorporate data from a scanner 202 are detected at step S603, it progresses to step S604.

[0041] It judges whether the data for 1 page were assembled, and at step S604, if it has not gathered, processing is resumed from step S600, and if it has gathered, it will print by progressing to step S605.

[0042] Next, the operations sequence in a host computer 201 is explained. A host computer 201 receives the scanning data which were transmitted by step S611 of LBP1000 and which were operated on a curtailed schedule (step S650), and carries out a screen display of the received data (step S651). The selection field of scanning data is directed by the operator on this display screen. According to these directions, the selection field of scanning data is assigned for every insertion field of PDL data (step S652). These results are notified to LBP1000 (step S653). The arrow head of the dotted line which is going before step S653 to the step S612 in drawing 6 shows that the result assigned at step S652 is transmitted to LBP1000.

[0043] In addition, since the insertion field of scanning data is beforehand specified in PDL data, at step S611, the identifier of an insertion field and each size may be transmitted to a host computer with scanning data.

[0044] Drawing 9 is the example of the preview screen in a host computer. The frame 610 equivalent to the size of the insertion field received from the printer is expressed as a host computer on the preview screen 607. And an operator operates the migration carbon button 611, moves this frame 610, and specifies the selection field compounded by PDL data.

[0045] Moreover, there may be two or more insertion fields specified in PDL data. In this case, at step S652, the identifier of an insertion field and the selection field of scanning data are matched and assigned, and that result is transmitted to a printer 1000.

[0046] If this operation gestalt is used as explained above, composition and printing of the scanning data which a user desires with a field and PDL data can be performed. Moreover, assignment of the field of scanning data is moving the frame of the size equivalent to the field specified by PDL data on a preview screen, and is *****. For this reason, assignment of a desired field can carry out very easily.

[0047] In addition, it can also constitute so that scanning data may be transmitted to a host computer 201, without lowering resolution, a host computer 201 may lower resolution at step S650 and scanning data may be received at step S611.

[0048] With the gestalt of [operation gestalt of ** 4th] the 2nd operation, the location of the insertion field specified by PDL and the location of the selection field of the scanner data compounded there corresponded. Moreover, with the gestalt of the 3rd operation, the size of the insertion field specified by PDL was equivalent to the size of the selection field of the scanner data compounded. An operator is made to also specify the location and size of an insertion field in PDL data with the gestalt of this operation in addition to the function which previews the data of a scanner 202 to a host computer 201. After these assignment ends, a host computer 201 creates PDL data and transmits them to a printer 1000. The system of this operation gestalt is the same as that of the configuration shown in drawing 7.

[0049] This operation gestalt is explained referring to drawing 7 and drawing 10 - drawing 15.

[0050] First, the processing on a host computer 201 is explained according to the flow chart of drawing 10. A user draws up a document etc. using a predetermined application program. The user adds the size and the location of the instruction of a purport to insert scanning data in, and an insertion field to the page of a request of this document. It depends for this actuation on the application which draws up a document.

[0051] A printer driver will be started if a printing demand is advanced. The procedure of drawing 10 shows actuation of the printer driver after this. First, it judges whether a printer driver has a scanning merge instruction in the created document data (step S1001). When it is judged that there is nothing, selection of the carbon button of scanning relation, such as the scanning data insertion point carbon button 603 and the scanning data preview carbon button 604, of the screen (it is called a printer driver window) shown in drawing 11 is made impossible, and the printer driver window 602 is displayed on the monitor 601 of a host computer 201 (step S1002).

[0052] On the other hand, when the synthetic instruction of scanning data is detected, the printer driver window 602 is displayed, using the above-mentioned scanning relation carbon button as selectable (step S1003).

[0053] Then, it waits until an operator operates the carbon button of either of the displayed windows (step S1004). If one of carbon buttons is pushed, it will progress to step S1005 and will judge [which carbon button was pushed and].

[0054] When the scanning data preview carbon button 604 is pushed, it progresses to step S1006. First, to a scanner 202, loading of a manuscript image is required, and a scanner reads in response to it and receives the image data which transmitted (step S1006). A printer driver displays the image data which received as a preview window 607 of drawing 12 (step S1007). An operator looks at this screen and operates it using the frame migration carbon button 611 etc. According to this actuation, the selection frame 610 in which a selection field is shown is moved, and while recording that location, it displays (step S1008).

[0055] When the scanning data insertion point carbon button 603 is pushed, the insertion point window 606 is displayed (step S1009). In this window, a frame 609 is displayed based on the synthetic part of the scanning data set as document data [finishing / creation].

[0056] When the print preview carbon button 605 is pushed, a non-illustrated printing preview window is displayed (step S1011). However, nothing is displayed into an insertion field. And it judges whether the preview of scanning data was performed about the page currently displayed (step S1012). If carried out, from the image data which received from the scanner in step S1006, the interior of the selection frame set up at step S1008 will be started, and it will be compounded and displayed on an insertion field (step S1013).

[0057] Moreover, when a print button 605 is pushed, document data [finishing / creation], the location of an insertion field and size which are set up, and the location and size of a selection field corresponding to it are changed into PDL data at the time, and it transmits to a printer 1000 (step S1014).

[0058] Drawing 13 is the flow chart of actuation of the printer 1000 of which reading of image data was required by step S1006 of drawing 10. First, a manuscript image is made to scan with a scanner 202 (step S1301). And the obtained image data is saved in memory 206 (step S1302), and it transmits to a host computer 201 in the resolution which had the image data specified (step S1304).

[0059] Drawing 14 shows actuation by the printer 1000 which received the PDL data transmitted after step S1014 of drawing 10.

[0060] Reception of PDL data processes analyzing the data etc. (step S1402). (step S1401) And it judges whether the instruction which directs composition of scanner data is included in the PDL data (step S1403). When contained, the location (dx1, dy1) which shows the selection field of PDL data to scanning data, and size x*y are obtained (step S1407). And the scanning data equivalent to a location (dx1, dy1) and the selection field of size x*y are read (step S1408). Under the present circumstances, if scanning data are already read for the preview display, it will not scan anew. In this case, the selection field set up is started from the data saved at step S1302 of drawing 13. If the preview is not performed, it will scan here and a manuscript image will be read.

[0061] The selection field of the read scanning data is developed in the location (dx2, dy2) of the set-up insertion field (step S1409).

[0062] When it is judged that there are no directions of composition of scanning data in step S1403, after step S1409, it develops in memory 206 based on PDL data at a dot image data (step S1405). At this time, a dot image data is developed so that the data which are already in memory 206 may be made into a background. Therefore, if scanning data are already stored in memory 206 at step S1409, it will be made into a background and an image will be compounded. In this way, if 1-page data are obtained (step S1406- YES), printing will be performed in step S1410.

[0063] Drawing 15 is drawing showing an example of the scanner data compounded in an above-mentioned procedure, and PDL data. In drawing 15, the image in the selection field set up on the data 901 read with the scan is compounded by the insertion field of the PDL data 902.

[0064] A selection field can be freely set up into scanning data on the screen of a host computer as mentioned above. Since this setup can be performed looking at the preview of scanning data, the partial image which a user desires can be chosen correctly and the selected part can be compounded in images,

such as a document expressed by PDL data. For this reason, it is not necessary to carry out location ***** of the selection field in the manuscript image scanned correctly beforehand to the insertion field of the scanning data in the printed matter which it is finally going to output. Moreover, since composition is performed in a printer, the processing load in a host computer is mitigable.

[0065] Furthermore, to perform the preview display of scanning data, it is necessary to transmit image data to a host computer from a scanner. In this case, the image data thinned out and carried out according to the display screen is enough as the image data transmitted. Moreover, it is not necessary to transmit scanning data to a printer from a host computer. For this reason, the image data sent out on a network is small data, and does not increase communicative traffic.

[0066] In addition, it is made to perform actuation of being as add **** [, and]. [moving the insertion frame 609 in which an insertion field is shown after step S1009 of drawing 10] [changing the size] In that case, the instruction according to these actuation is added also to the PDL data created at step S1014 with migration and an addition of an insertion frame. Moreover, when the size of the insertion frame 609 is changed, the size of the selection frame 610 is also changed according to it.

[0067] [the 5th operation gestalt] -- although it was determined with the 3rd and 4th operation gestalt whether have scanned at the time of the PDL data origination before the printer driver window 602 is started, it can make it possible to compound scanning data, after starting the printer driver window 602

[0068] According to the flow chart of drawing 16 , the configuration procedure of the selection field in this operation gestalt is explained, referring to drawing 17 . In addition, the structure of a system is the same as that of the gestalt of the 1st thru/or the 4th operation.

[0069] First, the processing on a host computer 201 is explained according to the flow chart of drawing 16 . The processing in a printer is the same as that of drawing 13 of the 4th operation gestalt, and drawing 14 . A user draws up a document etc. using a predetermined application program. The user adds the size and the location of the instruction of a purport to insert scanning data in, and an insertion field to the page of a request of this document. It depends for this actuation on the application which draws up a document.

[0070] A printer driver will be started if a printing demand is advanced. The procedure of drawing 16 shows actuation of the printer driver after this. First, among the screens shown in drawing 17 , a printer driver changes the scanning data incorporation carbon button 10001 into a selectable condition, and displays the printer driver window 602 (step S1601).

[0071] Then, it waits until an operator operates the carbon button of either of the displayed screens (step S1602). If one of carbon buttons is pushed, it will progress to step S1603 and will judge [which carbon button was pushed and].

[0072] When the scanning data incorporation carbon button 604 is pushed, it progresses to step S1604. First, to a scanner 202, loading of a manuscript image is required, and a scanner reads in response to it and receives the image data which transmitted (step S1604). A printer driver displays the image data which received as a preview window 607 of drawing 17 (step S1605). An operator looks at this screen and operates it using the frame migration carbon button 611 etc. According to this actuation, the selection frame 610 in which a selection field is shown is moved, and while recording that location, it displays (step S1606).

[0073] When the scanning data insertion point carbon button 603 (hidden in drawing 17) is pushed, the insertion point window 606 is displayed (step S1607). In this screen, the insertion frame 609 is displayed based on the synthetic part of the scanning data set as document data [finishing / creation].

[0074] When the print preview carbon button 605 is pushed, a non-illustrated print preview screen is displayed (step S1609). However, nothing is displayed into an insertion field. And it judges whether the preview of scanning data was performed about the page currently displayed (step S1610). If carried out, from the image data which received from the scanner in step S1604, the interior of the selection frame set up at step S1606 will be started, and it will be compounded and displayed on an insertion field (step S1611).

[0075] Moreover, when a print button 605 is pushed, document data [finishing / creation], the location of an insertion field and size which are set up, and the location and size of a selection field

corresponding to it are changed into PDL data at the time, and it transmits to a printer 1000 (step S1612).

[0076] In addition, when a scanning data incorporation carbon button is not pushed, PDL data are generated so that the field of the location corresponding to the insertion field of the scanning data defined in document data and size may be made into a selection field.

[0077] With the above procedure, the same operation effectiveness as the 4th operation gestalt can be acquired. Furthermore, even if an operator does not choose a selection field anew, the field on the scanning data corresponding to an insertion field is chosen as a selection field. For this reason, an operator can exclude the decision of the location of a selection field.

[0078] The field of the scanning data assigned with the insertion field in the [6th operation gestalt] and 3rd, and 4th operation gestalt When it is judged that a comparison means to compare magnitude with a (following and quota field) is established, and area size changes with comparison means, The warning message which tells that area size differs may be sent, processing may be stopped by error, or the function which can carry out enlarging or contracting of the quota field automatically, and can be doubled with an insertion field may be prepared. At this time, the change of whether warning and an error message are sent or to perform expansion/contraction automatically can be set up from a control panel 1012 or a host computer.

[0079] With the 3rd and 4th operation gestalten, the size of a selection field was determined according to the size of an insertion field, and an operator was not able to change it. However, with this operation gestalt, not only the location of a selection field but size can be changed in step S1008 of drawing 10 , and step S1606 of drawing 16 . The example in which size was automatically changed into drawing 18 is shown. In the case of drawing 18 , the selection field on scanning data is the image 1801 whole. On the other hand, the insertion field 1803 defined on the PDL data 1802 is a field smaller than it. In this case, it is reduced and an image 1801 is compounded by the insertion field 1803. Therefore, at step S1014 of drawing 10 , and step S1612 of drawing 16 , into PDL data, the image in the selection field of scanning data is set by the size of an insertion field, and expansion / instruction made to reduce also incorporates it. A printer 1000 interprets this instruction, expands / reduces scanning data, and compounds them with PDL data.

[0080] Before printing if this operation gestalt is used as explained above, it can know that the fields of the scanning data which a user uses for composition, and PDL data differ by an error or the warning message, and suitable measures can be taken.

[0081] Since enlarging or contracting of scanning data can be carried out automatically and the image in a selection field can also be set by the size of an insertion field, scanning data are expanded beforehand or it becomes unnecessary moreover, to reduce.

[0082] In [various modification] above-mentioned each operation gestalt, although the resolution of a scanner was beforehand set up by PDL1000, the scanner control section 208 asks a control panel 1012 the resolution of a printer, and it can incorporate data from a scanner 202 in the resolution inputted as a result. When it cannot carry out in the obtained resolution, it is the resolution nearest to it and data are incorporated from a scanner 202.

[0083] Moreover, with each above-mentioned operation gestalt, although the insertion field was beforehand specified in PDL data, also when a certain data already exist in the specified PDL data, it thinks. When such, you may enable it to specify either with a control panel 1012 or a host computer 201 from two methods of whether priority is given to PDL data, or priority is given to scanning data.

[0084] Drawing 19 is drawing which illustrated the data compounded according to this operation gestalt. The case where selection field 1901a in the scanner data 1901 is compounded with insertion field 1902a in the PDL data 1902 is considered. In this case, in order to develop scanning data priority, i.e., PDL data, as a dot image data previously and to pile up scanning data on it, it becomes like an image 1903. If it says by drawing 14 in order to carry out like this, not to develop the PDL data of step S1405 after step S1409, but what is necessary is just made to carry out between step S1402 and step S1403.

[0085] Moreover, since it is thought that priority is given to PDL data, the gestalt of the above 3rd and the 4th implementation should just develop PDL data after expansion of scanning data like drawing 14 ,

when it gives priority to PDL data.

[0086] Moreover, in order to change these, to process as drawing 14 , if the value of the flag is 1, and if it is 0, not to develop the PDL data of step S1405 after step S1409, but what is necessary is made to form the flag which changes a value according to actuation of an operator or the directions from a host computer, and just to carry out between step S1402 and step S1403.

[0087] Furthermore, priority cannot be given to either and the overlapping image can also be put in order in piles. Drawing 20 is drawing showing the example which compounds the PDL data 700 and the scanning data 705. If priority is given to scanning data, a certain image will already be outputted to the insertion field 701 of PDL data like an image 720. If priority is given to PDL data, the image in the selection field 706 of scanning data will be outputted like an image 710. If composition is chosen, both images will be set [they pile them up and] and outputted like an image 730. A user can also be made to specify the operation for piling up two images by the approach of this last. For example, the value of each corresponding pixel can be added, or if it is a binary image, an OR, an exclusive OR, etc. can be chosen. Even when PDL data are already in the field of the PDL data which insert scanning data by doing in this way, it can adjust on an airline printer.

[0088] Moreover, with an above-mentioned operation gestalt, although composition with scanning data and PDL data has been explained, even if the data compounded are image data other than scanning data, this operation gestalt is applicable.

[0089] Moreover, all the operation gestalten mentioned above were the systems by which the printer and the scanner became independent. However, the technique of image composition explained in each above-mentioned example is applicable to the system which connected with the host computer the digital compound machine which can be used as a copying machine, facsimile or a scanner, and a printer simple substance including a scanner and a printer.

[0090]

[Other operation gestalten] In addition, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device.

[0091] Moreover, the purpose of this invention supplies the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and is attained also by carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage.

[0092] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0093] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0094] Moreover, by performing the program code which the computer read, a part or all of processing that OS (operating system) which the function of the operation gestalt mentioned above is not only realized, but is working on a computer based on directions of the program code is actual is performed, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained.

[0095] Furthermore, after the program code read from the storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or the computer is equipped, a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped is actual performs, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained based on directions of the program code.

[Translation done.]

* NOTICES *

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- 2.**** shows the word which can not be translated.
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the example of the printing structure of a system in the 1st thru/or 2nd operation gestalt.

[Drawing 2] It is the sectional view of the laser beam printer 1000.

[Drawing 3] It is the flow chart which shows the operations sequence of the printer by the 1st operation gestalt.

[Drawing 4] It is the example of the image compounded in the 1st operation gestalt and each 2nd operation gestalt.

[Drawing 5] It is the flow chart which shows the operations sequence of the printer by the 2nd operation gestalt.

[Drawing 6] It is drawing showing the situation of the image composition by the printer of the 2nd operation gestalt.

[Drawing 7] It is the block diagram showing the example of the printing structure of a system in the 3rd thru/or 6th operation gestalt.

[Drawing 8] It is the flow chart which shows the operations sequence in the 3rd LBP1000 and host computer 201 in an operation gestalt.

[Drawing 9] It is drawing of the preview window of the scanner data displayed on a host computer with the 3rd operation gestalt.

[Drawing 10] It is the flow chart which shows the operations sequence of the host computer by the 4th operation gestalt.

[Drawing 11] It is drawing of the printer driver window displayed on a host computer with the 4th and 5th operation gestalten.

[Drawing 12] It is drawing of the screen displayed on a host computer with the 4th operation gestalt.

[Drawing 13] It is the flow chart which shows the reading procedure of the preview screen by the printer in the 4th and 5th operation gestalten.

[Drawing 14] It is the flow chart of the operations sequence of the printer in the 4th and 5th operation gestalten.

[Drawing 15] In the 4th and 5th operation gestalten, it is drawing showing the example of the image compounded.

[Drawing 16] It is the flow chart which shows the operations sequence of the host computer by the 5th operation gestalt.

[Drawing 17] It is drawing of the screen displayed on a host computer with the 5th operation gestalt.

[Drawing 18] It is drawing showing the example of the image compounded in the 6th operation gestalt.

[Drawing 19] It is drawing showing the example of the image at the time of giving priority in the image to compound.

[Drawing 20] It is drawing showing the example of the image at the time of giving priority in the image to compound.

201 Host Computer

202 Scanner
204 I/O
205 PDL Analysis Section
206 Memory
207 I/O
208 Scanner Control Section
209 Engine
507 I/O

[Translation done.]

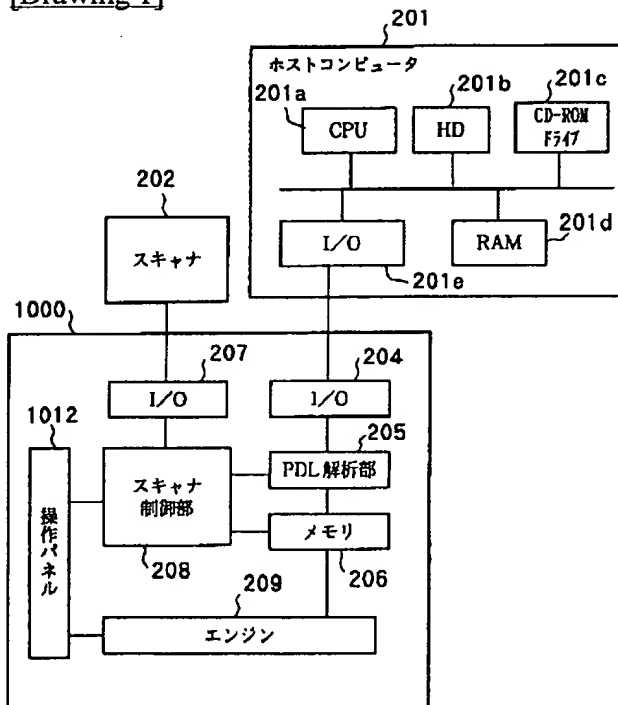
* NOTICES *

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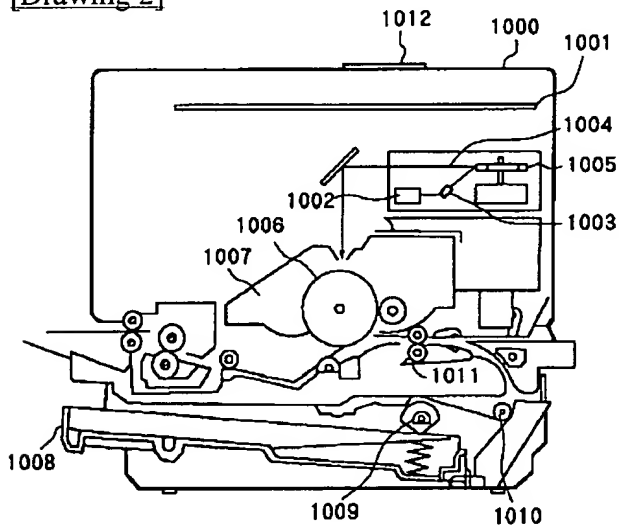
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DRAWINGS

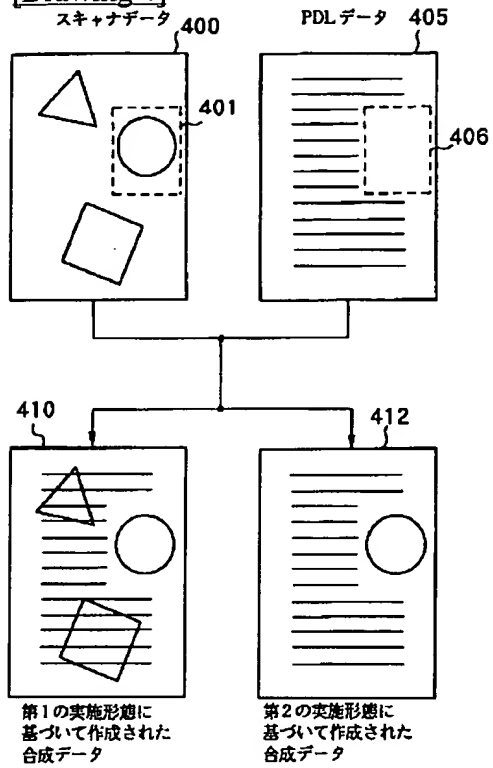
[Drawing 1]



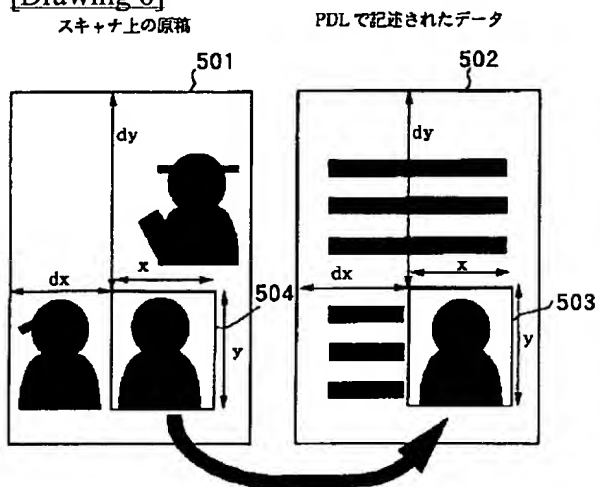
[Drawing 2]



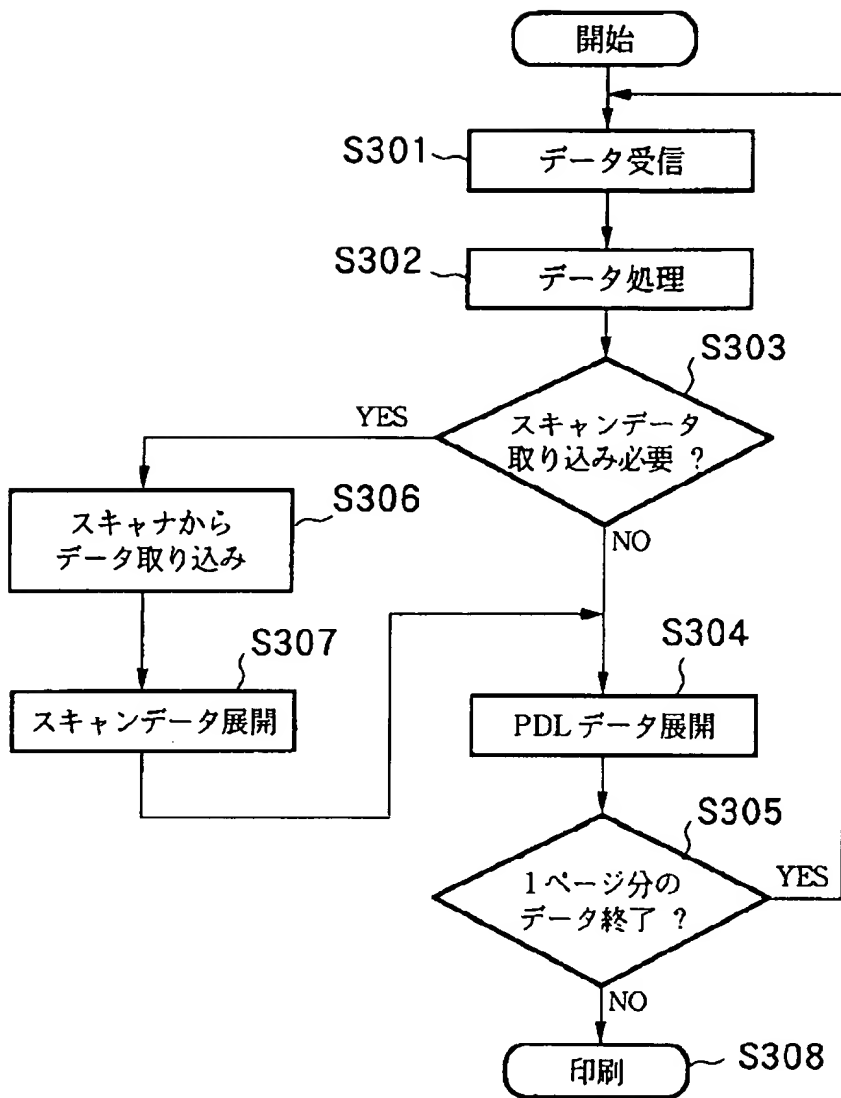
[Drawing 4]



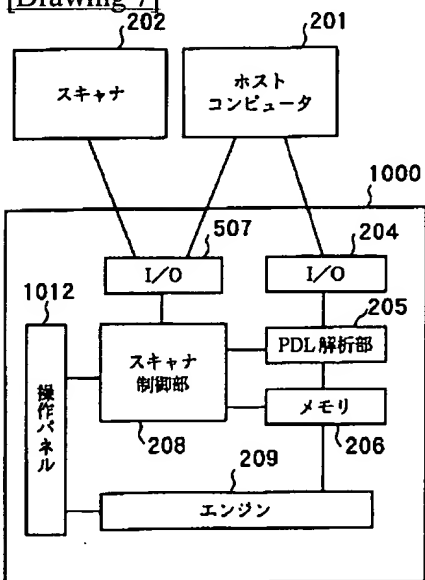
[Drawing 6]



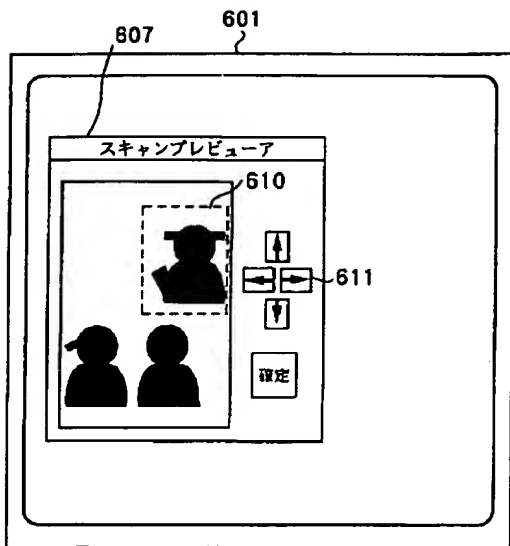
[Drawing 3]



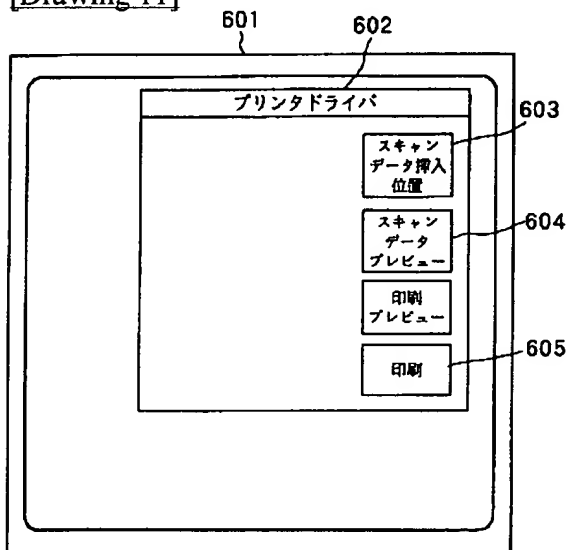
[Drawing 7]



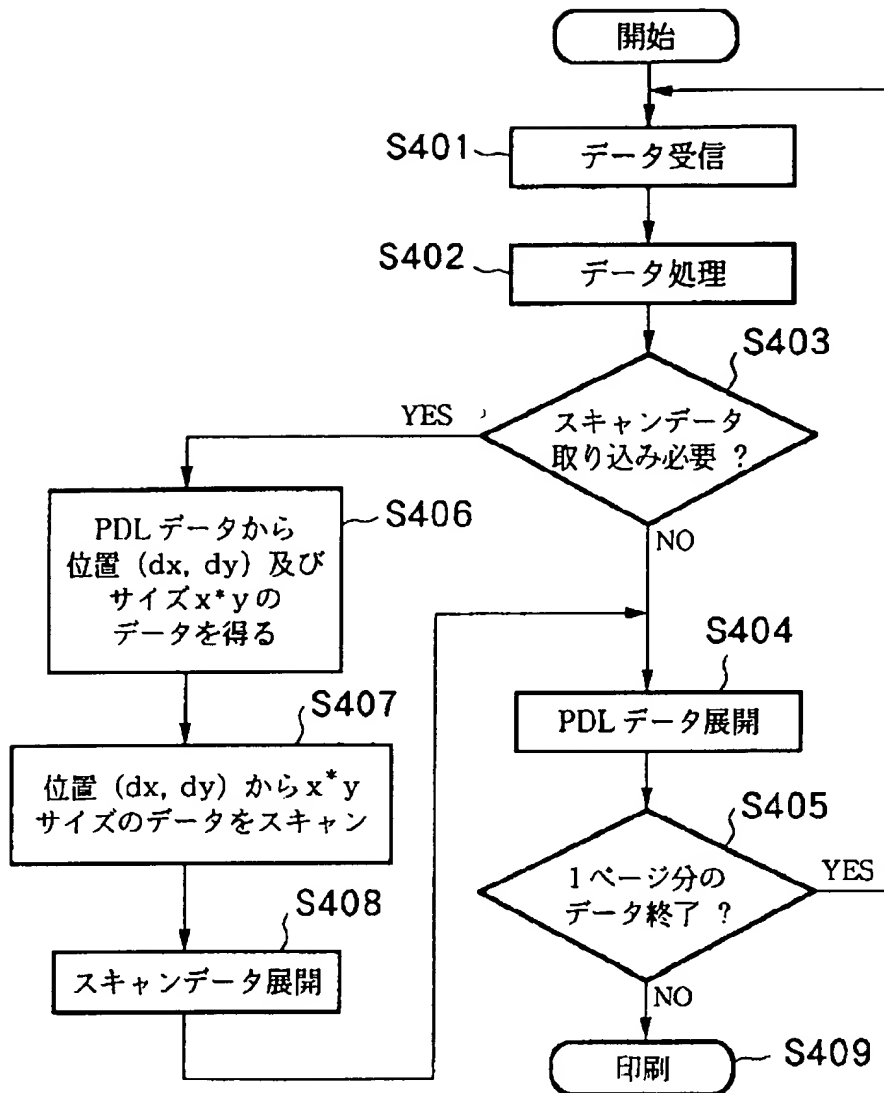
[Drawing 9]



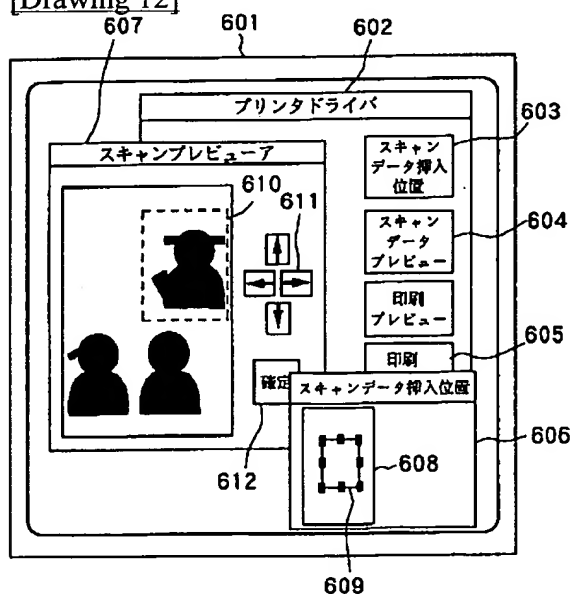
[Drawing 11]



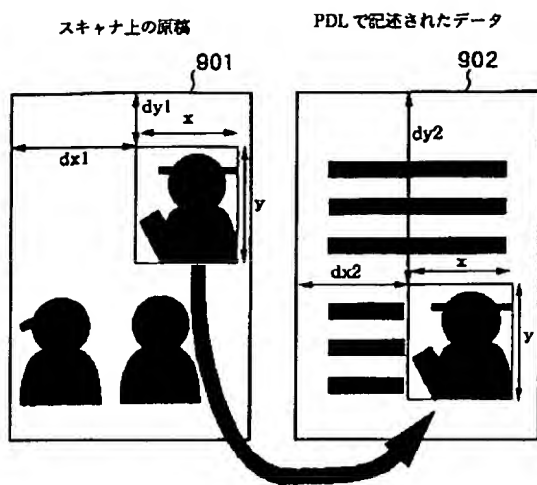
[Drawing 5]



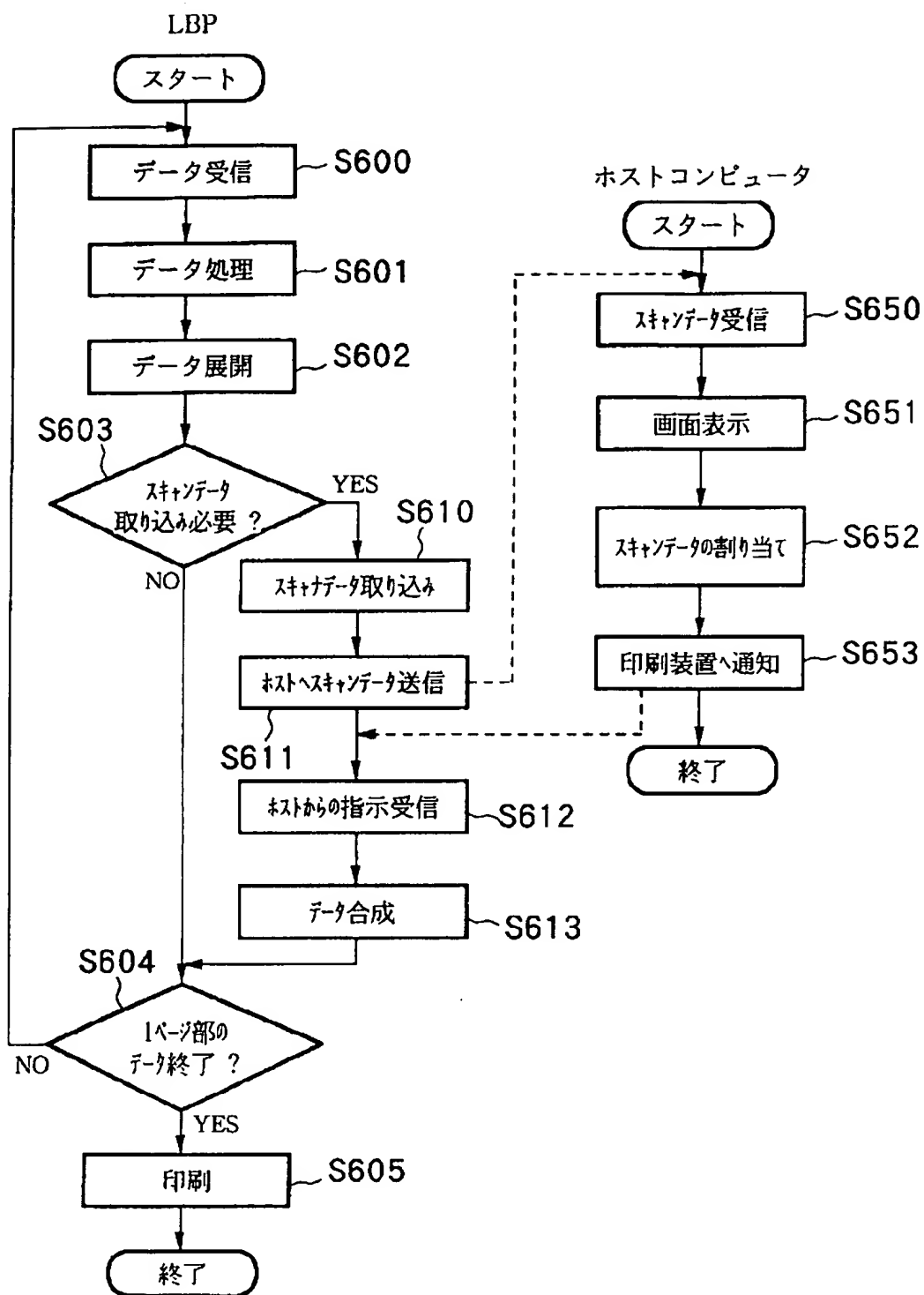
[Drawing 12]



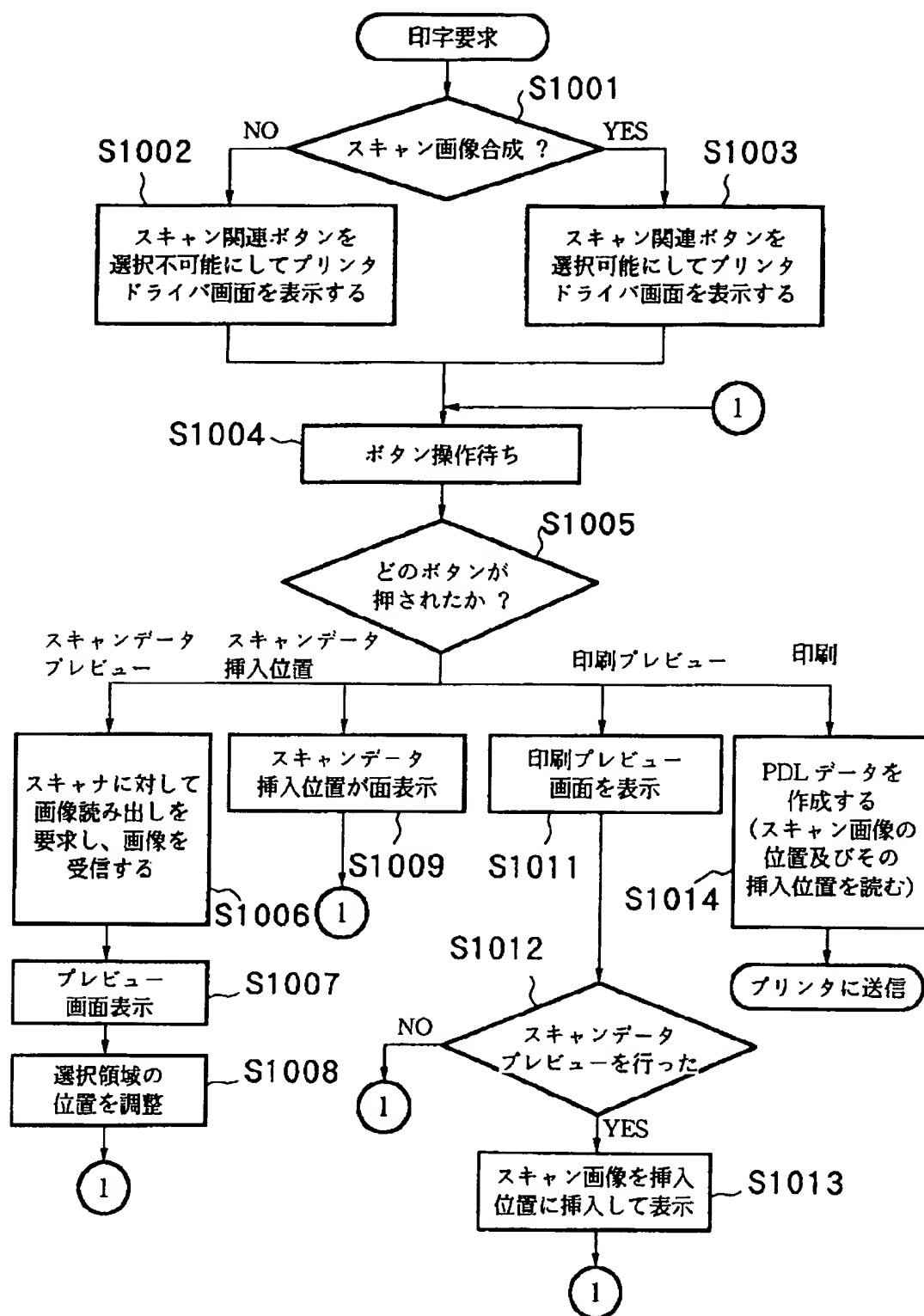
[Drawing 15]



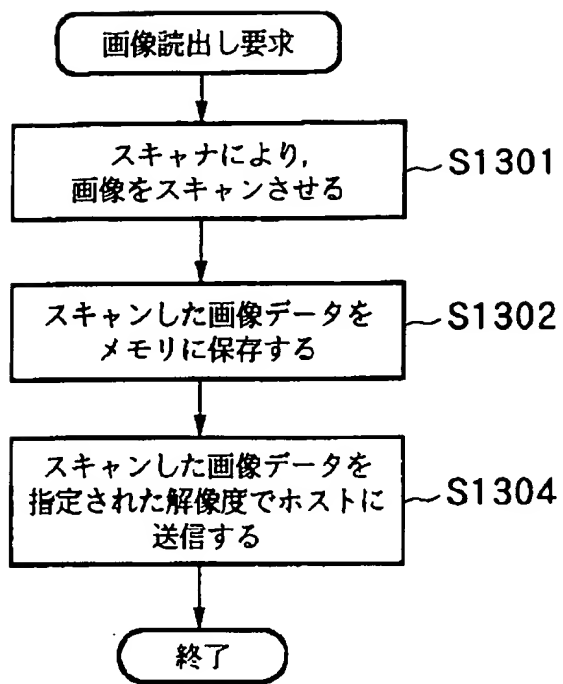
[Drawing 8]



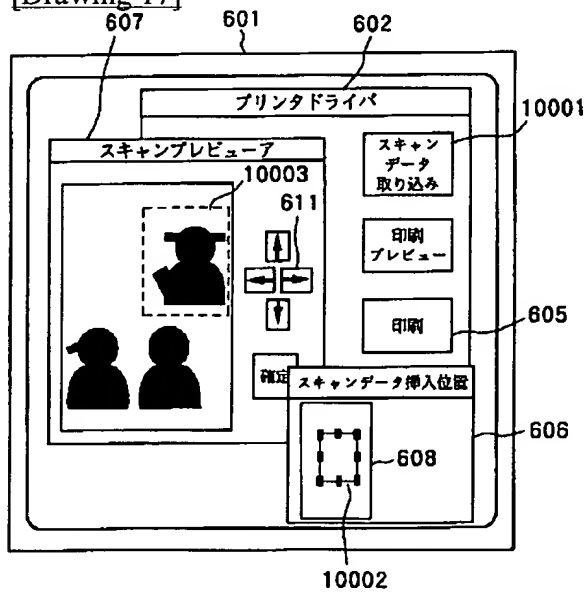
[Drawing 10]



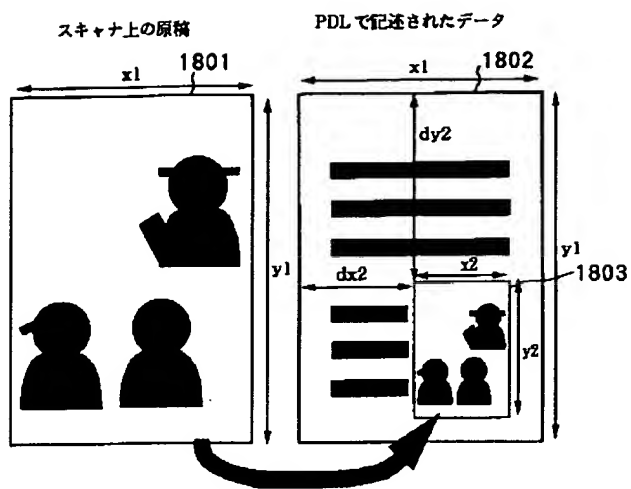
[Drawing 13]



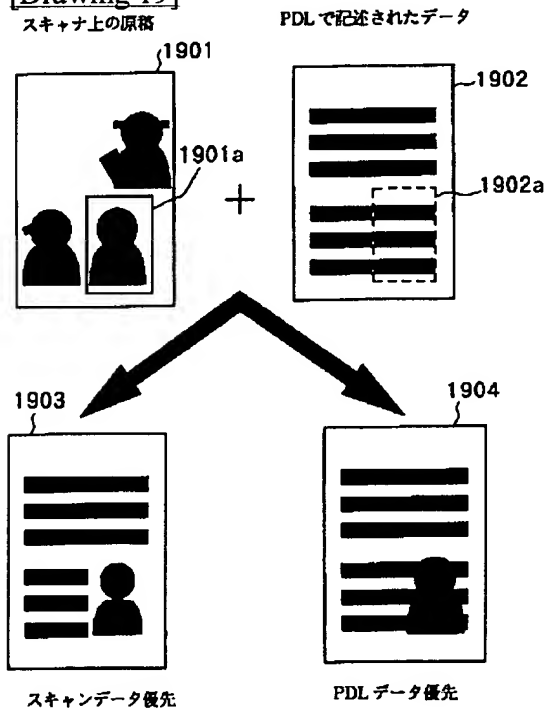
[Drawing 17]



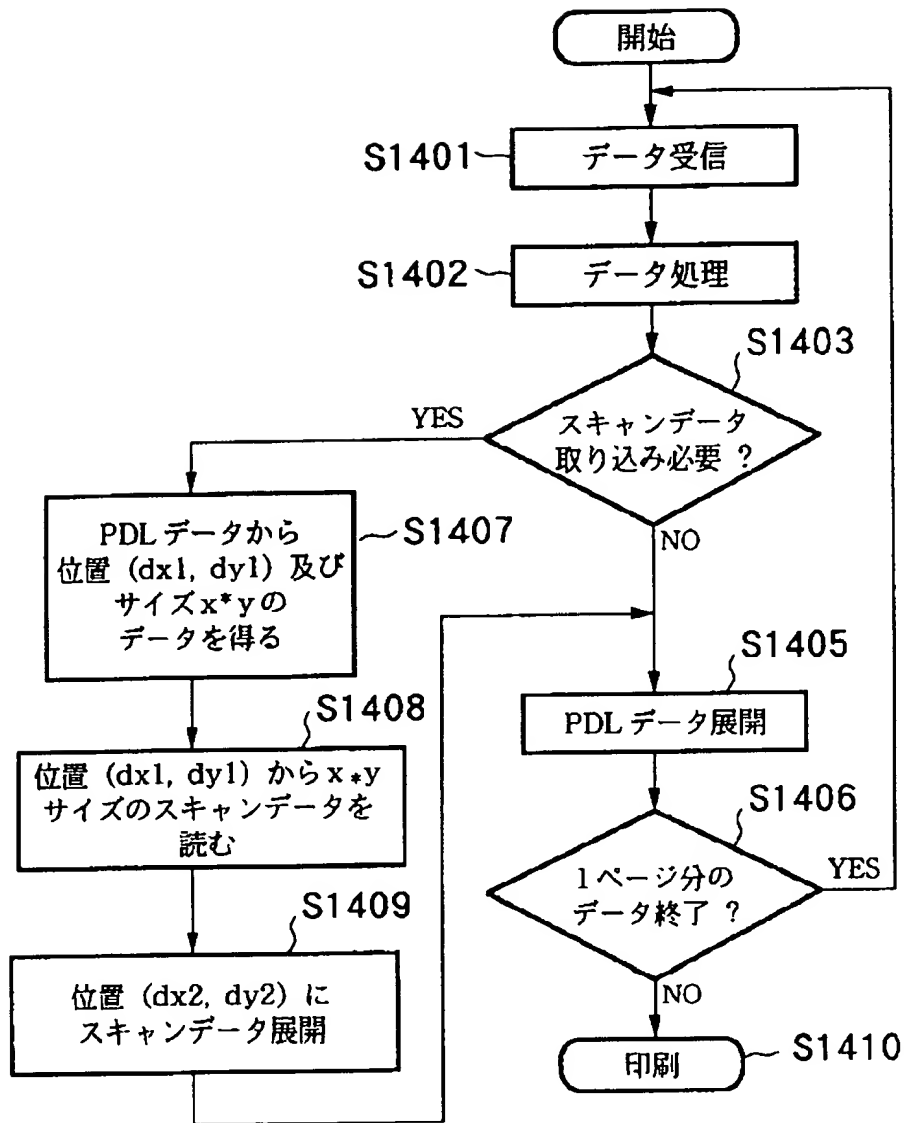
[Drawing 18]



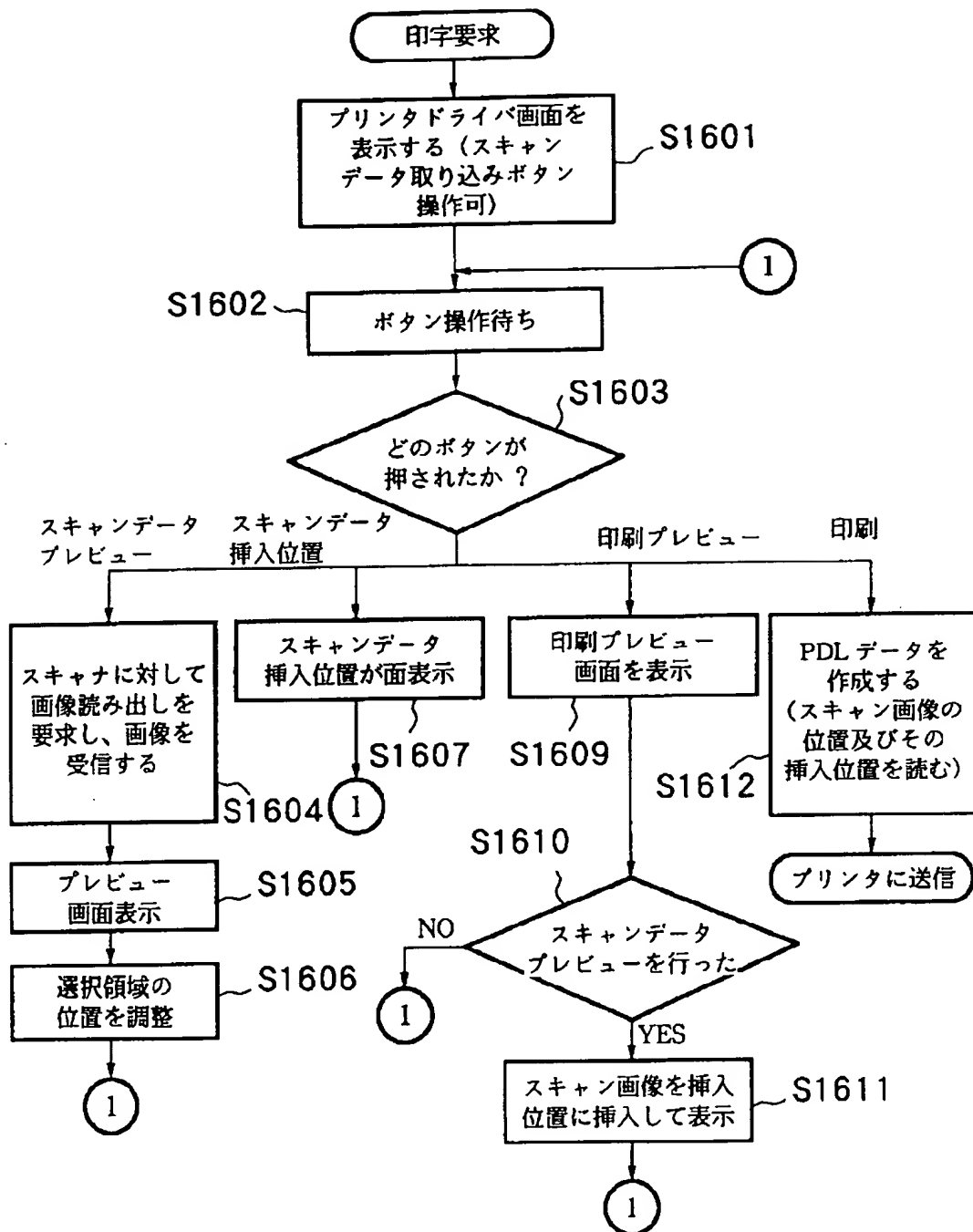
[Drawing 19]



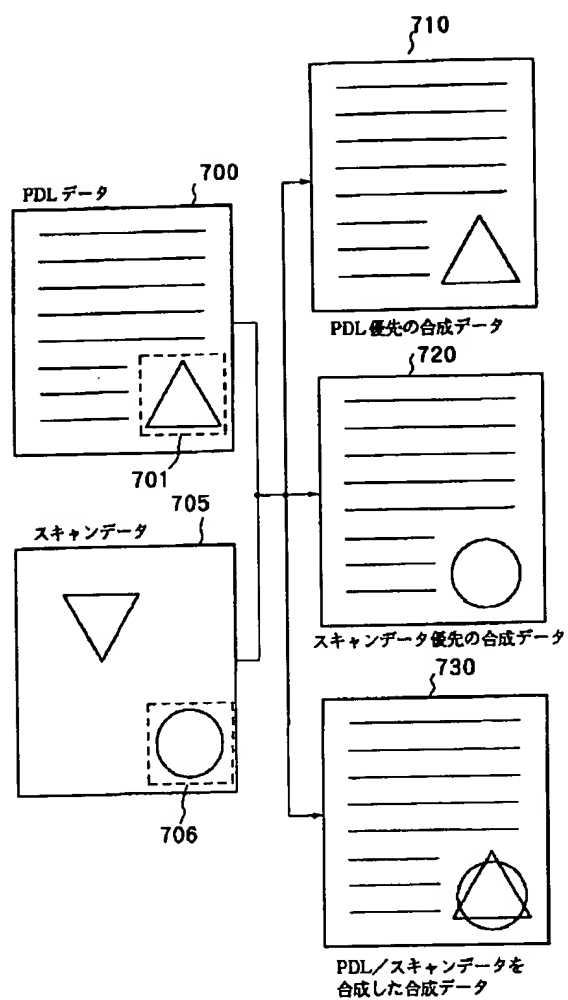
[Drawing 14]



[Drawing 16]



[Drawing 20]



[Translation done.]

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CORRECTION OR AMENDMENT

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 G06T 1/00
 H04N 1/387

[FI]

G06F 3/12 F
 C
 B41J 21/00 Z
 H04N 1/387
 G06F 15/66 450

[Procedure revision]
 [Filing Date] December 16, Heisei 14 (2002. 12.16)
 [Procedure amendment 1]
 [Document to be Amended] Specification
 [Item(s) to be Amended] Claim
 [Method of Amendment] Modification
 [Proposed Amendment]
 [Claim(s)]
 [Claim 1] A detection means to detect the instruction which directs composition with these print data and image data out of the print data transmitted from the external device,
 An incorporation means to incorporate image data if said instruction is detected by said detection means,

The airline printer characterized by having the image obtained based on said print data in the image data incorporated by said incorporation means, and a synthetic means to compound.

[Claim 2] Said instruction is an airline printer according to claim 1 characterized by including the instruction which directs the insertion field which inserts said read image data into a page.

[Claim 3] A transmitting means to transmit the image data incorporated by said incorporation means to said external device,

It has further a receiving means to receive the selection field information which shows the part which should compound in said image data from said external device,

Said synthetic means is an airline printer according to claim 2 characterized by compounding the image data contained to the selection field of said image data which said selection field information shows, and the image data of said insertion field.

[Claim 4] Furthermore, a comparison means to compare said insertion field and said selection area size, The airline printer according to claim 3 which stops actuation of the airline printer concerned or is characterized by expanding or reducing the image data in said quota field, and doubling with said insertion area size or it tells a user about this decision result when decision that magnitude changes with said comparison means is made.

[Claim 5] A decision means to judge whether the command which directs to incorporate image data and to compound the image based on print data and the image based on image data is contained in the print data transmitted from the external device,

A taking-in means to incorporate image data according to said directions,

A transfer means to transmit the image data concerned to said external device in order to display the image based on the image data incorporated by the aforementioned taking-in means,

A receiving means to receive the directions from [from said external device] an operator,

The airline printer characterized by having a synthetic means to compound the image based on the image data incorporated by the aforementioned taking-in means, and the image based on print data, according to the directions received by said receiving means.

[Claim 6] The detection process which detects the instruction which directs composition with these print data and image data out of the print data transmitted from the external device,

The incorporation process which will incorporate image data if said instruction is detected by said detection process,

The printing approach characterized by having the image obtained based on said print data in the image data incorporated according to said incorporation process, and the synthetic process to compound.

[Claim 7] It is the information processing approach performed with the information processor connected with the airline printer which can take in image data from a scanner,

The data transmitting process of transmitting print data including the instruction which directs the insertion field which inserts image data to said airline printer,

The receiving process which receives the image data which said airline printer incorporated from the scanner according to said directions from this airline printer,

The display process which displays the image data received according to said receiving process,

The image data directions process of directing the image data inserted in said insertion field based on the image data displayed by said display process,

The information processing approach characterized by including the transmitting process which transmits the result depended on said directions process to said airline printer.

[Claim 8] The image data received according to said receiving process is the information processing approach according to claim 7 characterized by including the image data to which resolution was lowered by said airline printer.

[Claim 9] Said display process is claim 7 characterized by to transmit to said airline printer as a field of the image data which displays the frame of the size equivalent to an insertion field, moves said frame according to directions by said directions process onto the image data which received, and inserts the location and the size of said frame in said insertion field according to said transmitting process, or the information-processing approach given in 8.

[Claim 10] It is the information processing approach in the information processor which can create the document data connected with the airline printer which can take in image data from a scanner,

The reading process which reads image data from a scanner through said airline printer according to the information on the insertion field which should insert image data included in document data,

The display process which displays the read image data,

The image data directions process of directing the selection field which shows the field of the image data inserted in said document data based on the image data displayed by said display process,

The information processing approach characterized by including the print-data creation process including the information on said insertion field and said selection field which creates the print data which can be interpreted with said airline printer, and is transmitted to an airline printer based on said document data, said insertion field, and said selection field.

[Claim 11] The information-processing approach according to claim 10 characterized by to display the frame showing a selection field while reading image data according to said reading process and displaying this image according to said display process, when it has further the carbon button display process which displays the carbon button it is directed that reads said image data from a scanner when [which outputs said document data] purport directions are carried out and said carbon button is operated.

[Claim 12] Said carbon button display process is the information processing approach according to claim 10 characterized by displaying the insertion field in said document data when the carbon button on which the insertion field in said document data which insert the read image data is displayed is displayed further and this carbon button is operated.

[Claim 13] It is the information processor connected with the airline printer which can take in image data from a scanner,

A data transmitting means to transmit print data including the instruction which directs the insertion field which inserts image data to said airline printer,

A receiving means to receive the image data which said airline printer incorporated from the scanner according to said directions from this airline printer,

A display means to display the image data received by said receiving means,

An image data directions means to direct the image data inserted in said insertion field based on the image data displayed by said display means,

The information processor characterized by including a transmitting means to transmit the result depended on said directions means to said airline printer.

[Claim 14] It is the information processor which can create the document data connected with the airline printer which can take in image data from a scanner,

A reading means to read image data from a scanner through said airline printer according to the information on the insertion field which should insert image data included in document data,

A display means to display the read image data,

An image data directions means to direct the selection field which shows the field of the image data inserted in said document data based on the image data displayed by said display means,

The information processor characterized by including a print-data creation means including the information on said insertion field and said selection field to create the print data which can be interpreted with said airline printer, and to transmit to an airline printer, based on said document data, said insertion field, and said selection field.

[Claim 15] The computer connected with the airline printer which can take in image data from a scanner,

The data transmitting process of transmitting print data including the instruction which directs the insertion field which inserts image data to said airline printer,

The receiving process which receives the image data which said airline printer incorporated from the scanner according to said directions from this airline printer,

The display process which displays the image data received according to said receiving process,

The image data directions process of directing the image data inserted in said insertion field based on the image data displayed by said display process,

The computer-readable record medium characterized by wanting to record the program for performing the transmitting process which transmits the result depended on said directions process to said airline printer.

[Claim 16] The computer connected with the airline printer which can take in image data from a scanner,

The reading process which reads image data from a scanner through said airline printer according to the information on the insertion field which should insert image data included in document data,

The display process which displays the read image data,

The image data directions process of directing the selection field which shows the field of the image data inserted in said document data based on the image data displayed by said display process,

The computer-readable record medium characterized by wanting to record the program including the information on said insertion field and said selection field for performing the print-data creation process which creates the print data which can be interpreted with said airline printer, and is transmitted to an airline printer based on said document data, said insertion field, and said selection field.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0008

[Method of Amendment] Modification

[Proposed Amendment]

[0008] That is, it has the detection process which detects the instruction which directs composition with these print data and image data out of the print data transmitted from the external device, the incorporation process which will incorporate image data if said instruction is detected by said detection process, and the image obtained based on said print data in the image data incorporated according to said incorporation process and the synthetic process to compound.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0009

[Method of Amendment] Modification

[Proposed Amendment]

[0009] Or it is the information processing approach performed with the information processor connected with the airline printer which can take in image data from a scanner. The data transmitting process of transmitting print data including the instruction which directs the insertion field which inserts image data to said airline printer, The receiving process which receives the image data which said airline printer incorporated from the scanner according to said directions from this airline printer, The display process which displays the image data received according to said receiving process, Based on the image data displayed by said display process, the image data directions process of directing the image data inserted in said insertion field, and the transmitting process which transmits the result depended on said directions process to said airline printer are included.

[Procedure amendment 4]

[Document to be Amended] Specification

[Item(s) to be Amended] 0010

[Method of Amendment] Modification

[Proposed Amendment]

[0010] Or connected with the airline printer which can take in image data from a scanner. The reading process which is the information processing approach in the information processor which can create document data, and reads image data from a scanner through said airline printer according to the information on the insertion field which was included in document data, and which should insert image data, The image data directions process of directing the selection field which shows the field of the image data inserted in said document data based on the image data displayed by the display process which displays the read image data, and said display process, Based on said document data, said insertion field, and said selection field, the print-data creation process including the information on said insertion field and said selection field which creates the print data which can be interpreted with said airline printer, and is transmitted to an airline printer is included.

[Translation done.]

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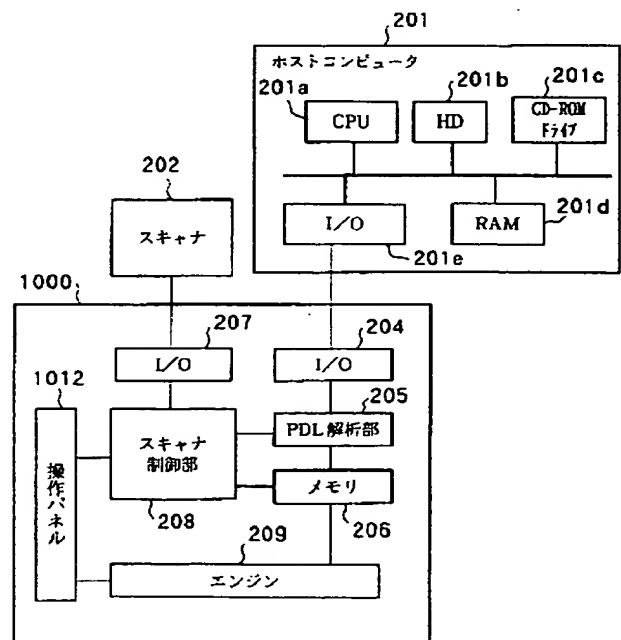
(74) 代理人 弁理士 大塚 康徳 (外2名)

(54) 【発明の名称】 印刷装置及び情報処理装置及びそれらの制御方法

(57) 【要約】

【課題】 スキャナで読んだ画像データを印刷データとを合成する場合、大量のメモリが必要で、データ処理に時間がかかるなどの問題がある

【解決手段】 ホスト装置201からプリンタ1000に送信する印刷データに、スキャナ202から読み込んだ画像を合成する旨の命令を組み込んでおき、プリンタ1000によりその命令を実行させて、印刷データとスキャナデータとを合成させる。その際に、スキャナ202から読み込んだ画像を、ホスト装置201に転送して、ホスト装置201においてプレビュー表示させる。そして、プレビュー表示画面上で、印刷データから形成される画像に組み込むべき領域を操作者に選択させる。



【特許請求の範囲】

【請求項1】 外部装置から送信された印刷データ中から、該印刷データと画像データとの合成を指示する命令を検出する検出手段と、

前記検出手段によって前記命令が検出されると、画像データを取り込む取り込み手段と、

前記取り込み手段によって取り込まれた画像データを前記印刷データに基づいて得られる画像と合成する合成手段とを備えることを特徴とする印刷装置。

【請求項2】 前記命令は、前記読み取られた画像データを挿入する挿入領域をページ中に指示する命令を含むことを特徴とする請求項1に記載の印刷装置。

【請求項3】 前記取り込み手段によって取り込まれた画像データを前記外部装置に送信する送信手段と、前記外部装置より前記画像データ中の合成すべき部分を示す選択領域情報を受信する受信手段をさらに備え、前記合成手段は、前記選択領域情報が示す前記画像データの選択領域に含まれる画像データと前記挿入領域の画像データとを合成することを特徴とする請求項2に記載の印刷装置。

【請求項4】 さらに、前記挿入領域と前記割り当て領域の大きさを比較する比較手段と、

前記比較手段によって大きさが異なるという判断がなされた場合、該判断結果をユーザに知らせる報知手段とを備えることを特徴とする請求項3に記載の印刷装置。

【請求項5】 さらに、前記挿入領域と前記割り当て領域の大きさを比較する比較手段と、

さらに、前記比較手段によって大きさが異なるという判断がなされた場合、当該印刷装置の動作を中止する手段とを備えることを特徴とする請求項3に記載の印刷装置。

【請求項6】 さらに、前記挿入領域と前記割り当て領域の大きさを比較する比較手段と、

さらに、前記比較手段によって大きさが異なるという判断がなされた場合、前記割り当て領域にある画像データを拡大あるいは縮小して前記挿入領域の大きさに合わせる変倍手段とを備える特徴とする請求項3に記載の印刷装置。

【請求項7】 さらに、前記挿入領域にすでにデータが存在する場合、該挿入領域の画像データと、前記選択領域の画像データのどちらを優先するかを選択する選択手段を備えることを特徴とする請求項2に記載の印刷装置。

【請求項8】 さらに、前記取り込み手段が画像データを取り込む際の解像度を設定する設定手段を備えることを特徴とする請求項1から7のいずれかに記載の印刷装置。

【請求項9】 前記画像データは、スキャナから送信される画像データを含むことを特徴とする請求項1に記載の印刷装置。

【請求項10】 スキャナから画像データを取り入れることが可能な印刷装置と接続された情報処理装置であって、

画像データを挿入する挿入領域を指示する命令を含んだ印刷データを前記印刷装置へ送信するデータ送信手段と、

前記指示に従って前記印刷装置がスキャナから取り込んだ画像データを該印刷装置から受信する受信手段と、

前記受信手段によって受信された画像データを表示する表示手段と、

前記表示手段によって表示された画像データに基づいて、前記挿入領域に挿入する画像データを指示する画像データ指示手段と、

前記指示手段による結果を前記印刷装置に送信する送信手段とを含むことを特徴とする情報処理装置。

【請求項11】 前記受信手段によって取り込まれる画像データは、前記印刷装置によって解像度が下げられた画像データを含むことを特徴とする請求項10に記載の情報処理装置。

【請求項12】 前記受信手段によって取り込まれる画像データは、当該情報処理装置によって解像度を下げられて受信されることを特徴とする請求項10に記載の情報処理装置。

【請求項13】 前記表示手段は、受信した画像データ上に挿入領域に相当するサイズの枠を表示し、前記指示手段による指示に応じて前記枠を移動し、前記送信手段により前記枠の位置及びサイズを、前記挿入領域に挿入する画像データの領域として前記印刷装置に送信することを特徴とする請求項10に記載の情報処理装置。

【請求項14】 スキャナから画像データを取り入れることが可能な印刷装置と接続された、文書データを作成可能な情報処理装置であって、

文書データに含まれた、画像データを挿入すべき挿入領域の情報に従って、前記印刷装置を介してスキャナから画像データを読み込む読み込み手段と、

読み込まれた画像データを表示する表示手段と、

前記表示手段によって表示された画像データに基づいて、前記文書データに挿入される画像データの領域を示す選択領域を指示する画像データ指示手段と、

前記文書データ及び前記挿入領域及び前記選択領域に基づいて、前記挿入領域及び前記選択領域の情報を含み、前記印刷装置により解釈可能な印刷データを作成して印刷装置に送信する印刷データ作成手段とを含むことを特徴とする情報処理装置。

【請求項15】 前記文書データを出力する旨指示された場合に、スキャナから前記画像データを読み出すよう指示するボタンを表示するボタン表示手段をさらに備え、前記ボタンが操作された場合に、前記読み込み手段によって画像データを読み込み、前記表示手段により該画像を表示するとともに、選択領域を表す枠を表示する

ことを特徴とする請求項14に記載の情報処理装置。

【請求項16】 前記ボタン表示手段は、読み込んだ画像データを挿入する前記文書データ中の挿入領域を表示させるボタンをさらに表示させ、該ボタンが操作された場合に、前記文書データ中の挿入領域を表示することを特徴とする請求項14に記載の情報処理装置。

【請求項17】 前記表示手段により表示される選択領域を示す枠は、前記挿入領域に対応するサイズで表示されることを特徴とする請求項16に記載の情報処理装置。

【請求項18】 前記表示手段により表示される挿入領域を示す枠を操作することで、前記挿入領域の位置あるいはサイズあるいはその両方を変更する手段をさらに備えることを特徴とする請求項16に記載の情報処理装置。

【請求項19】 スキャナから画像データを取り入れることが可能な印刷装置と接続された情報処理方法であって、
画像データを挿入する挿入領域を指示する命令を含んだ印刷データを前記印刷装置へ送信するデータ送信工程と、

前記指示に従って前記印刷装置がスキャナから取り込んだ画像データを該印刷装置から受信する受信工程と、
前記受信工程によって受信された画像データを表示する表示工程と、

前記表示工程によって表示された画像データに基づいて、前記挿入領域に挿入する画像データを指示する画像データ指示工程と、

前記指示工程による結果を前記印刷装置に送信する送信工程とを含むことを特徴とする情報処理方法。

【請求項20】 前記受信工程によって取り込まれる画像データは、前記印刷装置によって解像度が下げられた画像データを含むことを特徴とする請求項19に記載の情報処理方法。

【請求項21】 前記受信工程によって取り込まれる画像データは、当該情報処理方法によって解像度を下げられて受信されることを特徴とする請求項19に記載の情報処理方法。

【請求項22】 前記表示工程は、受信した画像データ上に挿入領域に相当するサイズの枠を表示し、前記指示工程による指示に応じて前記枠を移動し、前記送信工程により前記枠の位置及びサイズを、前記挿入領域に挿入する画像データの領域として前記印刷装置に送信することを特徴とする請求項19に記載の情報処理方法。

【請求項23】 スキャナから画像データを取り入れることが可能な印刷装置と接続された、文書データを作成可能な情報処理方法であって、
文書データに含まれた、画像データを挿入すべき挿入領域の情報に従って、前記印刷装置を介してスキャナから画像データを読み込む読み込み工程と、

読み込まれた画像データを表示する表示工程と、
前記表示工程によって表示された画像データに基づいて、前記文書データに挿入される画像データの領域を示す選択領域を指示する画像データ指示工程と、
前記文書データ及び前記挿入領域及び前記選択領域に基づいて、前記挿入領域及び前記選択領域の情報を含む、前記印刷装置により解釈可能な印刷データを作成して印刷装置に送信する印刷データ作成工程とを含むことを特徴とする情報処理方法。

【請求項24】 前記文書データを出力する旨指示された場合に、スキャナから前記画像データを読み出すよう指示するボタンを表示するボタン表示工程をさらに備え、前記ボタンが操作された場合に、前記読み込み工程によって画像データを読み込み、前記表示工程により該画像を表示するとともに、選択領域を表す枠を表示することを特徴とする請求項23に記載の情報処理方法。

【請求項25】 前記ボタン表示工程は、読み込んだ画像データを挿入する前記文書データ中の挿入領域を表示させるボタンをさらに表示させ、該ボタンが操作された場合に、前記文書データ中の挿入領域を表示することを特徴とする請求項23に記載の情報処理方法。

【請求項26】 前記表示工程により表示される選択領域を示す枠は、前記挿入領域に対応するサイズで表示されることを特徴とする請求項25に記載の情報処理方法。

【請求項27】 前記表示工程により表示される挿入領域を示す枠を操作することで、前記挿入領域の位置あるいはサイズあるいはその両方を変更する工程をさらに備えることを特徴とする請求項25に記載の情報処理方法。

【請求項28】 コンピュータにより実行可能なプログラムを記憶するコンピュータ可読のメモリであって、前記プログラムは、
画像データを挿入する挿入領域を指示する命令を含んだ印刷データを印刷装置へ送信するデータ送信工程と、
前記指示に従って前記印刷装置がスキャナから取り込んだ画像データを該印刷装置から受信する受信工程と、
前記受信工程によって受信された画像データを表示する表示工程と、

前記表示工程によって表示された画像データに基づいて、前記挿入領域に挿入する画像データを指示する画像データ指示工程と、
前記指示工程による結果を前記印刷装置に送信する送信工程とを含むことを特徴とするメモリ。

【請求項29】 前記受信工程によって取り込まれる画像データは、前記印刷装置によって解像度が下げられた画像データを含むことを特徴とする請求項28に記載のメモリ。

【請求項30】 前記受信工程によって取り込まれる画像データは、当該情報処理方法によって解像度を下げら

れて受信されることを特徴とする請求項28に記載のメモリ。

【請求項31】 前記表示工程は、受信した画像データ上に挿入領域に相当するサイズの枠を表示し、前記指示工程による指示に応じて前記枠を移動し、前記送信工程により前記枠の位置及びサイズを、前記挿入領域に挿入する画像データの領域として前記印刷装置に送信することを特徴とする請求項28に記載のメモリ。

【請求項32】 コンピュータにより実行可能なプログラムを記憶するコンピュータ可読のメモリであって、前記プログラムは、
文書データに含まれた、画像データを挿入すべき挿入領域の情報に従って、印刷装置を介してスキャナから画像データを読み込む読み込み工程と、
読み込まれた画像データを表示する表示工程と、
前記表示工程によって表示された画像データに基づいて、前記文書データに挿入される画像データの領域を示す選択領域を指示する画像データ指示工程と、
前記文書データ及び前記挿入領域及び前記選択領域に基づいて、前記挿入領域及び前記選択領域の情報を含む、前記印刷装置により解釈可能な印刷データを作成して印刷装置に送信する印刷データ作成工程とを含むことを特徴とするメモリ。

【請求項33】 前記プログラムは、前記文書データを出力する旨指示された場合に、スキャナから前記画像データを読み出すよう指示するボタンを表示するボタン表示工程をさらに含み、前記ボタンが操作された場合に、前記読み込み工程によって画像データを読み込み、前記表示工程により該画像を表示するとともに、選択領域を表す枠を表示することを特徴とする請求項32に記載のメモリ。

【請求項34】 前記ボタン表示工程は、読み込んだ画像データを挿入する前記文書データ中の挿入領域を表示させるボタンをさらに表示させ、該ボタンが操作された場合に、前記文書データ中の挿入領域を表示することを特徴とする請求項32に記載のメモリ。

【請求項35】 前記表示工程により表示される選択領域を示す枠は、前記挿入領域に対応するサイズで表示されることを特徴とする請求項34に記載のメモリ。

【請求項36】 前記表示工程により表示される挿入領域を示す枠を操作することで、前記挿入領域の位置あるいはサイズあるいはその両方を変更する工程をさらに備えることを特徴とする請求項34に記載のメモリ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、例えばスキャナ等より読み込んだ画像と印刷データに基づいて作成した画像とを合成して印刷する印刷装置及びそれを制御する情報処理装置とそれらの制御方法に関する。

【0002】

【従来の技術】従来、スキャナで取り込んだ画像データと、ホストコンピュータから送信されるPDL（ページ記述言語）等で記述された印刷データとを含む画像を印刷する場合、スキャナからホストコンピュータに一旦画像データを取り込み、その画像データとPDLデータとを合成して、そのデータをプリンタに送信して印刷させる必要があった。

【0003】

【発明が解決しようとする課題】しかしながら、スキャナとホストコンピュータとがネットワークを介して接続されている場合、スキャナで読み込むデータのサイズが大きいと、ネットワークに高い負荷をかけてしまう。また、ホストコンピュータに画像データを格納するための大量のメモリを必要とし、ホストコンピュータでのデータ処理に時間がかかるなどの問題があった。

【0004】本発明は、以上の課題を鑑みてなされたものであり、印刷データに含まれる指示に従って画像データを取り込み、その画像データと印刷データとを合成して出力する印刷装置及び該印刷装置に印刷データを送る情報処理装置とそれらの制御方法を提供することを目的とする。

【0005】さらに、印刷データと合成される画像データのトリムや合成位置に関する指示を印刷データに含めて印刷装置に送信することで、所望の合成のしかたで、印刷データと読み込んだ画像データとを合成できる印刷装置及び該印刷装置に印刷データを送る情報処理装置とそれらの制御方法を提供することを目的とする。

【0006】

【課題を解決するための手段】上記目的を達成するために、本発明は、ホスト装置からプリンタに送信する印刷データに、スキャナから読み込んだ画像を合成する旨の命令を組み込んでおき、プリンタによりその命令を実行させて、印刷データとスキャナデータとを合成させる。その際に、スキャナから読み込んだ画像を、ホスト装置に転送して、ホスト装置においてプレビュー表示させる。そして、プレビュー表示画面上で、印刷データから形成される画像に組み込むべき領域を操作者に選択させる。

【0007】また、本発明の達成するための他の構成は次のようなものである。

【0008】すなわち、外部装置から送信された印刷データ中から、該印刷データと画像データとの合成を指示する命令を検出する検出手段と、前記検出手段によって前記命令が検出されると、画像データを取り込む取り込み手段と、前記取り込み手段によって取り込まれた画像データを前記印刷データに基づいて得られる画像と合成する合成手段とを備える。

【0009】あるいは、スキャナから画像データを取り入れることが可能な印刷装置と接続された情報処理装置であって、画像データを挿入する挿入領域を指示する命

令を含んだ印刷データを前記印刷装置へ送信するデータ送信手段と、前記指示に従って前記印刷装置がスキャナから取り込んだ画像データを該印刷装置から受信する受信手段と、前記受信手段によって受信された画像データを表示する表示手段と、前記表示手段によって表示された画像データに基づいて、前記挿入領域に挿入する画像データを指示する画像データ指示手段と、前記指示手段による結果を前記印刷装置に送信する送信手段とを含む。

【0010】あるいは、スキャナから画像データを取り入れることが可能な印刷装置と接続された、文書データを作成可能な情報処理装置であって、文書データに含まれた、画像データを挿入すべき挿入領域の情報に従って、前記印刷装置を介してスキャナから画像データを読み込む読み込み手段と、読み込まれた画像データを表示する表示手段と、前記表示手段によって表示された画像データに基づいて、前記文書データに挿入される画像データの領域を示す選択領域を指示する画像データ指示手段と、前記文書データ及び前記挿入領域及び前記選択領域に基づいて、前記挿入領域及び前記選択領域の情報を含み、前記印刷装置により解釈可能な印刷データを作成して印刷装置に送信する印刷データ作成手段とを含む。

【0011】

【発明の実施の形態】〔第1の実施形態〕以下、図面を参照して本発明の好適な実施の形態を詳細に説明する。

【0012】図1は、本発明にかかる印刷システムの構成例を示すブロック図である。図1のプリンタ1000において、I/O204は、ホストコンピュータ201からページ記述言語で記述された印刷データ（以下、PDLデータ）を受け取る。I/O207はスキャナ202からのデータ（以下、スキャンデータあるいはスキャン画像）を受け取る。PDL解析部205は、I/O204が受け取ったPDLデータを基に、ビットマップイメージデータを展開する。メモリ206は、展開されたビットマップイメージデータを保存する。スキャナ制御部208は、PDL解析部205の要請に応じてスキャナ202からデータを入手し、メモリ206にデータを書き込む。印刷を行うに当たっての様々な動作の設定は操作パネル1012で行うことができる。それらの設定はホストコンピュータ201からダウンロードすることもできる。プリンタエンジン209は、作成されたデータを印刷する。

【0013】また、ホストコンピュータ201は、ハードディスク(HD)201bやCD-ROMドライブ201cなどの媒体を取り外せる外部記憶装置からRAM201dにロードされたプログラムを実行する。これにより、ホストコンピュータは、それ自身及び印刷システム全体を制御し、後述するフローチャートで示した手順を実行する。I/Oインターフェース201eは、プリンタ1000と通信を行うためのインターフェースであ

る。

【0014】なお、本実施形態では、プリンタ1000としてレーザービームプリンタを例にとり説明する。まず、本実施形態を適用するのに好適なレーザービームプリンタの構成を図2を参照して説明する。

【0015】図2は本実施形態が適用されたレーザービームプリンタ（以下、LBPという）の構成について示した断面図である。このLBPはデータ源（不図示）から文字パターンの登録や定型書式（フォームデータ）などの登録が行える。なお、本実施形態が適用される印刷装置は、LBPだけでなく、インクジェット方式等、他の印刷方式の印刷装置でも良い。

【0016】図2において、LBP本体1000は、それに接続されているホストコンピュータ201などの外部装置から供給される文字情報（文字コード）やフォーム情報あるいはマクロ命令などを入力して記憶する。それとともに、それらの情報に従って対応する文字パターンなどを作成し、記録媒体である記録紙上に像を形成する。操作パネル1012には操作のためのスイッチおよびLED表示等が配され、プリンタ制御ユニット1001はLBP本体1000全体の制御およびホストから供給される文字情報などを解析する。このプリンタ制御ユニット1001は、主に文字情報を対応する文字パターンのビデオ信号に変換し、レーザドライバ1002に出力する。レーザドライバ1002は半導体レーザ1003を駆動するための回路であり、入力されたビデオ信号に応じて半導体レーザ1003から発射されるレーザ光1004のオン・オフを切り換える。レーザ光1004は回転多面鏡1005で、左右方向に振られて静電ドラム1006上を操作露光する。これにより、静電ドラム1006上には文字パターンの静電潜像が形成される。この潜像は、静電ドラム1006周囲に配設された現像ユニット1007により現像され、その後、記録紙に転写される。この記録紙にはカットシートが用いられ、カットシート記録紙はLBP1000に装着された用紙カセット1008に収納され、給紙ローラ1009および搬送ローラ1010と搬送ローラ1011とにより装置内に取り込まれて、静電ドラム1006に供給される。

【0017】図3は、本実施形態における動作手順フローチャートであり、特にスキャンデータとPDLデータとを合成して印刷する動作手順を示すフローチャートである。図2及び図3を参照しながら、印刷システムの動作を説明する。

【0018】ホストコンピュータで文書の編集などが終了し、作成された文書等の印刷が指示されると、まずホストコンピュータ201において、作成された文書データをプリンタ1000で解釈可能なPDLデータに変換する。その後、スキャンデータの組込みの指示がされているページがあるか判定し、もしあれば、あらかじめ定められたスキャンデータの取り込み要求の命令を、ステ

ップS801で作成したPDLデータ中に、指定されたページに対応づけて組み込んでおく。最後に、作成したPDLデータをプリンタ1000に送信する。このデータを受信したプリンタは、図3の手順で動作する。ホストコンピュータ201がプリンタ1000に印字データを送信すると、I/O204が受信し(ステップS301)、PDL解析部205で受信した印字データの解析等の処理を行なう(ステップS302)。PDL解析部205は、印字データがスキャナ202からデータを取り込む指示か否かを判断する(ステップS303)。直前に展開されたページに対してスキャンデータを合成するための命令がPDLデータ中に検出されると、スキャナ制御部208に対して、指定の解像度(PDLデータ中で指定されている)、あるいは一番近い解像度でデータを読み込むように指示する。これに応じて、スキャナ制御部208はI/O207を通してスキャナ202からデータを取り込み(ステップS306)、取り込んだデータをメモリ206に展開する(ステップS307)。

【0019】ステップS307の後、あるいはステップS303でスキャナ202からデータを取り込む指示が無いと判断した場合には、PDLデータに基づいた画像データを、メモリ206に展開する(ステップS304)。この際、メモリ206にすでに展開されている画像が背景となるように、PDLデータから生成した画像を重ねていく。

【0020】以上の処理を終えた段階で1ページ分のデータが揃ったか否かを判断し(ステップS305)、揃っていなければステップS301から処理を再開し、揃っていれば印刷を行なう(ステップS308)。

【0021】なお、ステップS307におけるスキャナデータの展開においては、スキャナデータに対しては、トリムやマスク、あるいは変倍といった処理は施されず、読み込まれたデータがそのままPDLデータから展開された画像データに合成される。

【0022】以上説明したように、本実施形態の印刷装置は、ホストコンピュータから送られてくるPDLデータに従って、スキャンデータを自動的に読み込み、印刷装置内でPDLデータとスキャンデータを合成することができる。したがって、スキャナからホストコンピュータにスキャンデータを転送する必要も、ホストコンピュータからプリンタにスキャンデータを転送する必要もない。このため、スキャナ202やプリンタ1000との間の通信トラフィックを減らすことができる。これにより、ホストコンピュータが、ローカルエリアネットワークなど、他のホストコンピュータや周辺機器と共有される通信網を介してプリンタに接続されている場合には特に、ネットワークやプリンタを使用する際の競合を防止できる。

【0023】また、画像の合成をホストコンピュータで

行う必要がないため、ホストコンピュータを有効に利用することができる。

【0024】また、PDL命令の一部として、スキャンデータを合成する命令がプリンタ与えられるために、所望のページに対してスキャンデータの合成を指示できる。

【0025】[第2の実施形態] 第1の実施形態では、スキャナから取り込んだデータをPDLデータから展開したデータに単に合成する例を示した。本実施形態では、スキャンデータを組み込む箇所を、PDLデータによって指定しておく。

【0026】図4は、第1の実施形態と第2の実施形態との違いを説明するための図である。スキャンデータ400とPDLデータ405とを合成して印刷する場合、第1の実施形態にしたがってデータの合成を行うと、合成データ410のように、スキャンデータ400を背景にしてその上にPDLデータ405が重ねられた画像データが作成される。したがって、第1の実施形態においては、スキャンデータ中には、PDLデータとの合成に不要なデータ(図4ではスキャンデータ400中の領域401以外の部分)があってはならない。

【0027】一方、本実施形態では、PDLデータから展開した画像データにスキャンデータ405を挿入する挿入領域406を、PDLデータによって指定しておく。プリンタにおいては、挿入領域406に対応するスキャンデータの領域である選択領域401がメモリ206に展開され、その上からPDLデータ405が書き込まれて合成データ412が作成される。

【0028】図5は、上述のように画像を形成するためのプリンタによる処理手順である。

【0029】ホストコンピュータ201がプリンタ1000に印字データを送信すると、I/O204が受信し(ステップS401)、PDL解析部205で受信した印字データの解析等の処理を行なう(ステップS402)。PDL解析部205は、印字データがスキャナ202からデータを取り込む指示か否かを判断する(ステップS403)。直前に展開されたページに対してスキャンデータを合成するための命令がPDLデータ中に検出されると、スキャナ制御部208に対して、指定の解像度(PDLデータ中で指定されている)、あるいは一番近い解像度でデータを読み込むように指示する。また、前記合成するための命令と関連づけられてPDLデータに含まれる、合成されるスキャンデータの領域を特定するための位置(dx, dy)及びサイズx*yを、スキャナ制御部208に指示する(ステップS406)。スキャナ制御部208はI/O207を通してスキャナ202から指定した領域のデータを取り込み(ステップS407)、取り込んだデータをメモリ206に展開する(ステップS408)。ここで、スキャンされたデータから指定された領域を切り取ってメモリに展開しても

良いし、スキャナが機構的に可能であれば、指定された領域だけスキャンしても良い。

【0030】図6は、スキャンデータ501と、PDLデータ502とが合成された画像の例を示している。図6において、挿入領域503が、その位置を表す左上角の座標(dx, dy)と、そのサイズを表す横の長さx及び縦の長さyとにより指定される。スキャンデータ501からは、その挿入領域503に対応する選択領域504が切り取られ、PDLデータ502に合成される。

【0031】ステップS408の後、あるいはステップS403でスキャナ202からデータを取り込む指示が無いと判断した場合には、PDLデータに基づいた画像データを、メモリ206に展開する(ステップS404)。この際、メモリ206にすでに展開されているスキャンデータが背景となるように、PDLデータから生成した画像を重ねていく。

【0032】以上の処理を終えた段階で1ページ分のデータがそろったか否かを判断し(ステップS405)、そろっていない場合はステップS301から処理を再開し、そろっていれば印刷を行なう(ステップS409)。

【0033】以上説明したように、本実施形態を用いれば、第1の実施形態と同様の効果が得られる。それに加えて、挿入領域がPDLデータによって正確に指示されるので、データ合成には不必要な画像がスキャンデータに含まれていても、必要なスキャンデータのみがPDLデータと合成される。

【0034】[第3の実施形態] 第1及び第2の実施形態では、スキャンデータはLBP1000に送信されていたが、LBP1000が受信したスキャンデータをホストコンピュータへ送信して、ホストコンピュータ上でスキャンデータの概略がプレビューできるように構成することもできる。さらに、ホストコンピュータ201上でプレビューされたスキャンデータを基に、予めPDLデータ中に指定されているスキャンデータを挿入する挿入領域毎に、どのスキャンデータを割り当てるのか指示することもできる。

【0035】図7は、本実施形態が適用された印刷システムの構成例を示すブロック図である。なお、第1及び第2の実施形態における図1と同一の機能を有するブロックには同一の参照符号を付してある。I/O507は、スキャナ202からデータを受け取ると、スキャナ制御部208とホストコンピュータ201の両方にデータを送る。ホストコンピュータ201は、受信したスキャンデータからドットを間引き、プレビュー機能によってホストコンピュータの画面上にスキャンデータを表示する。あるいは、I/O507がホストコンピュータの表示機能に応じてスキャンデータからドットを間引き、ホストコンピュータに送信しても良い。

【0036】図8は、本実施形態におけるLBP100

0とホストコンピュータ201それぞれの動作手順を示すフローチャートである。LBP1000での手順をステップS600～ステップS613で示し、ホストコンピュータ201での手順をステップS650～ステップS653で示す。

【0037】最初にLBP1000内での動作手順について説明する。ホストコンピュータ201から送信されたPDLデータをLBP1000がI/O204で受信すると(ステップS600)、PDL解析部205でPDLデータの処理を行ない(ステップS601)、PDLデータをメモリ206上に展開する(ステップS602)。

【0038】PDL解析部205は、展開したデータとスキャンデータとの合成を指示する命令を検出すると(ステップS603のYES)、スキャナ制御部208にスキャナ202のデータの取り込みを指示する。取り込みを指示されたスキャナ制御部208は、I/O507を通してスキャンデータを取り込む(ステップS610)。スキャンデータを取り込むときの解像度は、すでにPDL解析部205で指定された値とし、もし、指定された解像度で取り込めないときは、指定された解像度に一番近い解像度で行う。同時に、取り込まれたスキャンデータはI/O507からホストコンピュータ201へも送信される(ステップS611)。このとき、プレビュー機能の表示解像度に合わせてスキャンデータの解像度を下げた後から送信するようにすると、送信データのデータ量を減らすことができる。図6中のステップS611からステップS650の前に向かって点線の矢印は、ステップS610で取り込まれたスキャンデータが送信されていることを示す。

【0039】その後、スキャナ制御部208は、PDLデータによって割り当てられた挿入領域に、スキャンデータにおける選択領域の位置を示す情報を、ホストコンピュータ201から受信する(ステップS612)。ステップS602でメモリ206に展開されたPDLデータに基づく画像の挿入領域に、スキャンデータにおいて指示された選択領域の内容を書き込んで、PDLデータとスキャンデータの合成を行う(ステップS613)。

【0040】一方、ステップS603で、スキャナ202からデータを取り込む指示が検出されなかった場合は、ステップS604へすすむ。

【0041】ステップS604では、1ページ分のデータがそろったか否かを判断し、そろっていない場合はステップS600から処理を再開し、そろっていればステップS605へすすみ、印刷を行なう。

【0042】次にホストコンピュータ201での動作手順について説明する。ホストコンピュータ201は、LBP1000のステップS611により送信された、間引きされたスキャンデータを受信し(ステップS650)、受信したデータを画面表示する(ステップS65

1)。この表示画面上で、オペレータによりスキャンデータの選択領域が指示される。この指示に従い、PDLデータの挿入領域毎にスキャンデータの選択領域が割り当てられる(ステップS652)。これらの結果をLBP1000へ通知する(ステップS653)。図6中のステップS653からステップS612の前に向かって点線の矢印は、ステップS652で割り当てられた結果がLBP1000に送信されていることを示す。

【0043】なお、スキャンデータの挿入領域はPDLデータ中であらかじめ指定されているため、ステップS611では、スキャンデータとともに、挿入領域の識別子と、それぞれのサイズをホストコンピュータに送信してもよい。

【0044】図9は、ホストコンピュータにおけるプレビュー画面の例である。ホストコンピュータでは、プレビュー画面607上に、プリンタから受信した挿入領域のサイズに相当する枠610を表示する。そして、オペレータは、移動ボタン611を操作してこの枠610を移動し、PDLデータに合成される選択領域を指定する。

【0045】また、PDLデータ中で指定されている挿入領域が複数箇所あることもあり得る。この場合には、ステップS652では、挿入領域の識別子とスキャンデータの選択領域とを対応づけて割り当て、その結果をプリンタ1000に送信する。

【0046】以上説明したように、本実施形態を用いれば、利用者の望むスキャンデータの領域とPDLデータとの合成及び印刷が行える。また、スキャンデータの領域の指定は、PDLデータで指定された領域に相当するサイズの枠をプレビュー画面上で移動することで行われる。このため、所望の領域の指定が非常に簡単に行える。

【0047】なお、ステップS611で、解像度を下げずにスキャンデータをホストコンピュータ201へ送信し、ステップS650で、ホストコンピュータ201が解像度を下げてスキャンデータを受信するように構成することもできる。

【0048】〔第4の実施形態〕第2の実施の形態では、PDLで指定した挿入領域の位置と、そこに合成されるスキャナデータの選択領域の位置とは対応していた。また、第3の実施の形態では、PDLで指定した挿入領域のサイズは、合成されるスキャナデータの選択領域のサイズに対応していた。本実施の形態では、ホストコンピュータ201にスキャナ202のデータをプレビューする機能に加えて、PDLデータにおける挿入領域の位置とサイズも、オペレータに指定させる。これらの指定が済んでから、ホストコンピュータ201はPDLデータを作成し、プリンタ1000に送信する。本実施形態のシステムは、図7に示した構成と同様である。

【0049】図7及び図10～図15を参照しながら、

本実施形態を説明する。

【0050】まず、ホストコンピュータ201上での処理を、図10のフローチャートにしたがって説明する。利用者は、所定のアプリケーションプログラムを利用して、文書等を作成する。この文書の所望のページに、利用者は、スキャンデータを挿入したい旨の命令及び挿入領域のサイズ及び位置を付け加えておく。この操作は、文書を作成するアプリケーションに依存する。

【0051】印字要求が出されるとプリンタドライバが起動される。図10の手順は、これ以降のプリンタドライバの動作を示している。まず、プリンタドライバは、作成された文書データ中にスキャンデータ合成命令があるか否かを判断する(ステップS1001)。無いと判断した場合には、図11に示した画面(プリンタドライバウインドウと呼ぶ)を、スキャンデータ挿入位置ボタン603及びスキャンデータプレビューボタン604といった、スキャン関連のボタンを選択不可能にして、プリンタドライバウインドウ602をホストコンピュータ201のモニタ601に表示する(ステップS1002)。

【0052】一方、スキャンデータの合成命令が検出された場合には、前述のスキャン関連ボタンを選択可能として、プリンタドライバウインドウ602を表示する(ステップS1003)。

【0053】この後、オペレータが、表示されたウインドウ内のいずれかのボタンを操作するまで待つ(ステップS1004)。いずれかのボタンが押されると、ステップS1005に進んで、どのボタンが押されたのか判定する。

【0054】スキャンデータプレビューボタン604が押された場合、ステップS1006に進む。まず、スキャナ202に対して、原稿画像の読み込みを要求し、スキャナがそれに応じて読み、送信した画像データを受信する(ステップS1006)。プリンタドライバは受信した画像データを図12のプレビューウインドウ607として表示する(ステップS1007)。オペレータはこの画面を見て枠移動ボタン611などを利用して操作を行う。この操作に従って、選択領域を示す選択枠610を移動させ、その位置を記録するとともに表示する(ステップS1008)。

【0055】スキャンデータ挿入位置ボタン603が押された場合、挿入位置ウインドウ606が表示される(ステップS1009)。このウインドウにおいて、枠609は、作成済みの文書データに設定された、スキャンデータの合成箇所に基づいて表示される。

【0056】印刷プレビューボタン605が押された場合には、不図示の印刷プレビューウインドウを表示する(ステップS1011)。ただし、挿入領域の中にはなにも表示しない。そして、表示されているページについて、スキャンデータのプレビューが行われたか判定す

る(ステップS1012)。行われたなら、ステップS1006においてスキャナから受信した画像データから、ステップS1008で設定された選択枠の内部を切り出し、それを挿入領域に合成して表示する(ステップS1013)。

【0057】また、印刷ボタン605が押された場合には、その時点で作成済みの文書データと、設定されている挿入領域の位置及びサイズと、それに対応する選択領域の位置及びサイズとをPDLデータに変換して、プリンタ1000に送信する(ステップS1014)。

【0058】図13は、図10のステップS1006により、画像データの読み込みを要求されたプリンタ1000の動作のフローチャートである。まず、スキャナ202によって、原稿画像をスキャンさせる(ステップS1301)。そして、得られた画像データをメモリ206に保存し(ステップS1302)、その画像データを指定された解像度でホストコンピュータ201に送信する(ステップS1304)。

【0059】図14は、図10のステップS1014の後で送信されるPDLデータを受信したプリンタ1000による動作を示す。

【0060】PDLデータを受信すると(ステップS1401)、そのデータを解析するなどの処理を行う(ステップS1402)。そして、そのPDLデータの中に、スキャナデータの合成を指示する命令が含まれているか判定する(ステップS1403)。含まれている場合には、PDLデータから、スキャンデータの選択領域を示す位置(dx1, dy1)と、サイズx*yとを得る(ステップS1407)。そして、位置(dx1, dy1)、サイズx*yの選択領域に相当するスキャンデータを読む(ステップS1408)。この際、すでにプレビュー表示のためにスキャンデータが読まれているなら、改めてスキャンを行わない。この場合には、図13のステップS1302で保存されたデータから、設定されている選択領域を切り出す。プレビューが行われていないなら、ここでスキャンを行って原稿画像を読みとる。

【0061】読みとられたスキャンデータの選択領域を、設定された挿入領域の位置(dx2, dy2)に展開する(ステップS1409)。

【0062】ステップS1403においてスキャンデータの合成の指示がないと判断された場合、あるいはステップS1409の後には、PDLデータを基に、メモリ206にドットイメージデータに展開する(ステップS1405)。このとき、すでにメモリ206にあるデータを背景にするように、ドットイメージデータは展開される。そのため、ステップS1409でスキャンデータがすでにメモリ206に格納されているなら、それを背景にしてイメージが合成される。こうして1ページのデータが得られると(ステップS1406-YES)、ス

テップS1410において、印刷が実行される。

【0063】図15は、上述の手順で合成されるスキャナデータとPDLデータの一例を示す図である。図15では、スキャンで読み込まれたデータ901上で設定された選択領域内の画像が、PDLデータ902の挿入領域に合成されている。

【0064】以上のようにして、ホストコンピュータの画面上で、スキャンデータ中に選択領域を自由に設定することができる。この設定は、スキャンデータのプレビューを見ながら行えるために、利用者の望む部分画像を正確に選択し、選択された部分を、PDLデータにより表された文書等の画像に合成することができる。このため、スキャンされる原稿画像中における選択領域を、最終的に出力しようとする印刷物におけるスキャンデータの挿入領域に、あらかじめ正確に位置あわせしておく必要がない。また、合成はプリンタにおいて行われるため、ホストコンピュータにおける処理負荷が軽減できる。

【0065】さらに、スキャンデータのプレビュー表示を行う場合には、スキャナからホストコンピュータへと画像データを転送する必要がある。この場合に転送される画像データは表示画面に応じて間引きした画像データで十分である。また、ホストコンピュータからプリンタへとスキャンデータを送信する必要はない。このため、ネットワーク上に送り出される画像データは小さなデータであり、通信のトラフィックを増やすことはない。

【0066】なお、図10のステップS1009の後で、挿入領域を示す挿入枠609を移動したり、あるいはそのサイズを変更したり、あるいは追加したりといった操作ができるようにしてもよい。その場合には、挿入枠の移動や追加に伴って、ステップS1014で作成されるPDLデータにも、それら操作に応じた命令が付け加えられる。また、挿入枠609のサイズが変更された場合には、選択枠610のサイズもそれに応じて変更される。

【0067】[第5の実施形態]第3、第4の実施形態では、プリンタドライバウインドウ602が起動される前のPDLデータ作成時にスキャンするか否かが決定されていたが、プリンタドライバウインドウ602を起動後にスキャンデータを合成できるようにすることもできる。

【0068】図17を参照しながら、図16のフローチャートにしたがって、本実施形態における選択領域の設定手順を説明する。なお、システムの構成は、第1乃至第4の実施の形態と同様である。

【0069】まず、ホストコンピュータ201上での処理を、図16のフローチャートにしたがって説明する。プリンタにおける処理は、第4実施形態の図13、図14と同様である。利用者は、所定のアプリケーションプログラムを利用して、文書等を作成する。この文書の所

望のページに、利用者は、スキャンデータを挿入したい旨の命令及び挿入領域のサイズ及び位置を付け加えておく。この操作は、文書を作成するアプリケーションに依存する。

【0070】印字要求が出されるとプリンタドライバが起動される。図16の手順は、これ以降のプリンタドライバの動作を示している。まず、プリンタドライバは、図17に示した画面のうち、プリンタドライバウィンドウ602をスキャンデータ取り込みボタン10001を選択可能な状態にして表示する(ステップS1601)。

【0071】この後、オペレータが、表示された画面内のいずれかのボタンを操作するまで待つ(ステップS1602)。いずれかのボタンが押されると、ステップS1603に進んで、どのボタンが押されたのか判定する。

【0072】スキャンデータ取り込みボタン604が押された場合、ステップS1604に進む。まず、スキャナ202に対して、原稿画像の読み込みを要求し、スキャナがそれに応じて読み、送信した画像データを受信する(ステップS1604)。プリンタドライバは受信した画像データを図17のプレビューウィンドウ607として表示する(ステップS1605)。オペレータはこの画面を見て枠移動ボタン611などを利用して操作を行う。この操作に従って、選択領域を示す選択枠610を移動させ、その位置を記録するとともに表示する(ステップS1606)。

【0073】スキャンデータ挿入位置ボタン603(図17では隠されている)が押された場合、挿入位置ウィンドウ606が表示される(ステップS1607)。この画面において、挿入枠609は、作成済みの文書データに設定された、スキャンデータの合成箇所に基づいて表示される。

【0074】印刷プレビューボタン605が押された場合には、不図示の印刷プレビュー画面を表示する(ステップS1609)。ただし、挿入領域の中にはなにも表示しない。そして、表示されているページについて、スキャンデータのプレビューが行われたか判定する(ステップS1610)。行われたなら、ステップS1604においてスキャナから受信した画像データから、ステップS1606で設定された選択枠の内部を切り出し、それを挿入領域に合成して表示する(ステップS1611)。

【0075】また、印刷ボタン605が押された場合には、その時点で作成済みの文書データと、設定されている挿入領域の位置及びサイズと、それに対応する選択領域の位置及びサイズとをPDLデータに変換して、プリンタ1000に送信する(ステップS1612)。

【0076】なお、スキャンデータ取り込みボタンが押されなかった場合には、文書データ中で定義されている

スキャンデータの挿入領域に対応する位置及びサイズの領域を選択領域とするよう、PDLデータを生成する。

【0077】以上の手順により、第4の実施形態と同じ作用効果を得られる。さらに、オペレータが選択領域を改めて選択しなくとも、選択領域として、挿入領域に対応するスキャンデータ上の領域が選ばれる。このため、オペレータは、選択領域の位置の決定を省くことができる。

【0078】[第6の実施形態]また、第3、第4の実施形態において、挿入領域と割り当てられたスキャンデータの領域(以下、割り当て領域)との大きさを比較する比較手段を設け、比較手段によって領域の大きさが異なると判断された場合、領域の大きさが異なることを知らせる警告メッセージを出したり、エラーで処理を中止したり、割り当て領域を自動で拡大縮小して挿入領域に合わせることができ機能の設けてもよい。このとき、警告やエラーメッセージを出すか、それとも、自動的に拡大/縮小を行うかの切換えは、操作パネル1012やホストコンピュータから設定できる。

【0079】第3及び第4の実施形態では、選択領域のサイズは挿入領域のサイズに応じて決定され、オペレータが変更することはできなかった。しかしながら、本実施形態では、図10のステップS1008及び図16のステップS1606において、選択領域の位置のみならず、サイズも変更できる。図18にサイズが自動的に変更された例を示す。図18の場合、スキャンデータ上の選択領域は画像1801全体である。これに対して、PDLデータ1802上で定義された挿入領域1803は、それよりも小さい領域である。この場合には、画像1801は縮小されて、挿入領域1803に合成される。そのために、図10のステップS1014及び図16のステップS1612では、PDLデータ中に、スキャンデータの選択領域内の画像を、挿入領域のサイズに合わせて拡大/縮小させる命令も組み込んでおく。プリンタ1000はこの命令を解釈して、スキャンデータを拡大/縮小し、PDLデータと合成する。

【0080】以上説明したように、本実施形態を用いれば、印刷する前に、ユーザが合成に用いるスキャンデータとPDLデータの領域が異なっていることをエラーや警告メッセージによって知ることができ、適切な処置をとることができる。

【0081】また、自動的にスキャンデータの拡大縮小をして、選択領域内の画像を挿入領域のサイズに合わせることもできるので、スキャンデータを前もって拡大したり縮小したりする必要がなくなる。

【0082】[各種変形例]上記各実施形態では、スキャナの解像度はPDL1000で予め設定されていたが、スキャナ制御部208が操作パネル1012にプリンタの解像度を問い合わせ、その結果入力された解像度でスキャナ202からデータを取り込むようにすること

もできる。得られた解像度で行えない場合は、それに一番近い解像度で、スキャナ202からデータを取り込むようにする。

【0083】また、上記各実施形態では、PDLデータ中に挿入領域が予め指定されていたが、指定されたPDLデータ中にすでに何らかのデータが存在する場合も考えられる。このようなときは、PDLデータを優先するか、あるいはスキャンデータを優先するか、という2つの方法から、いずれかを操作パネル1012あるいはホストコンピュータ201で指定できるようにしてもよい。

【0084】図19は本実施形態に従って合成されるデータを例示した図である。スキャナデータ1901中の選択領域1901aを、PDLデータ1902中の挿入領域1902aと合成する場合を考える。この場合には、スキャンデータ優先、すなわち、PDLデータを先にドットイメージデータとして展開し、その上にスキャンデータを重ねるため、画像1903のようになる。こうするためには、図14でいえば、ステップS1405のPDLデータの展開をステップS1409の後に行わず、ステップS1402とステップS1403との間に行うようにすればよい。

【0085】また、上記第3及び第4の実施の形態は、PDLデータを優先するように考えられているため、PDLデータを優先する場合には、図14のように、スキャンデータの展開の後に、PDLデータの展開を行えばよい。

【0086】また、これらを切り替えるためには、オペレータの操作やホストコンピュータからの指示に応じて値を変えるフラグを設け、そのフラグの値が1であれば、図14の通りに処理を行い、0であれば、ステップS1405のPDLデータの展開をステップS1409の後に行わず、ステップS1402とステップS1403との間に行うようにすればよい。

【0087】さらに、いずれかを優先させず、重複する画像をかさねてしまうこともできる。図20は、PDLデータ700とスキャンデータ705とを合成する例を示す図である。スキャンデータを優先すれば画像720のように、PDLデータの挿入領域701にすでにある画像が出力される。PDLデータを優先すれば画像710のように、スキャンデータの選択領域706内の画像が出力される。合成を選択すれば、画像730のように、双方の画像が重ね合わされて出力される。この最後の方法では、2つの画像を重ね合わせるための演算を利用者に指定させることもできる。例えば、対応する各画素の値を加算したり、2値画像であれば、論理和や排他的論理和などを選ぶことができる。このようにすることで、スキャンデータを挿入するPDLデータの領域にすでにPDLデータがある場合でも、印刷装置上で調整できる。

【0088】また、上述の実施形態では、スキャンデータとPDLデータとの合成について説明してきたが、合成されるデータがスキャンデータ以外の画像データであっても、本実施形態を適用することができる。

【0089】また、上述した実施形態は、すべてプリンタとスキャナとが独立したシステムであった。しかし、スキャナとプリンタとを含み、複写機やファクシミリ、あるいはスキャナ、プリンタ単体として使用できるデジタル複合機をホストコンピュータと接続したシステムに、上記各実施例で説明した画像合成の技術を適用することができる。

【0090】

【他の実施形態】なお、本発明は、複数の機器（例えばホストコンピュータ、インタフェース機器、リーダー、プリンタなど）から構成されるシステムに適用しても、一つの機器からなる装置（例えば、複写機、ファクシミリ装置など）に適用してもよい。

【0091】また、本発明の目的は、前述した実施形態の機能を実現するソフトウェアのプログラムコードを記録した記憶媒体を、システムあるいは装置に供給し、そのシステムあるいは装置のコンピュータ（またはCPUやMPU）が記憶媒体に格納されたプログラムコードを読み出し実行することによっても達成される。

【0092】この場合、記憶媒体から読み出されたプログラムコード自体が前述した実施形態の機能を実現することになり、そのプログラムコードを記憶した記憶媒体は本発明を構成することになる。

【0093】プログラムコードを供給するための記憶媒体としては、例えば、フロッピーディスク、ハードディスク、光ディスク、光磁気ディスク、CD-ROM、CD-R、磁気テープ、不揮発性のメモ리카ード、ROMなどを用いることができる。

【0094】また、コンピュータが読み出したプログラムコードを実行することにより、前述した実施形態の機能が実現されるだけでなく、そのプログラムコードの指示に基づき、コンピュータ上で稼働しているOS（オペレーティングシステム）などが実際の処理の一部または全部を行い、その処理によって前述した実施形態の機能が実現される場合も含まれる。

【0095】さらに、記憶媒体から読み出されたプログラムコードが、コンピュータに挿入された機能拡張ボードやコンピュータに接続された機能拡張ユニットに備わるメモリに書込まれた後、そのプログラムコードの指示に基づき、その機能拡張ボードや機能拡張ユニットに備わるCPUなどが実際の処理の一部または全部を行い、その処理によって前述した実施形態の機能が実現される場合も含まれる。

【0096】

【発明の効果】以上説明したように、本発明によれば、PDLデータに従って、スキャンデータを自動的に読み

込み、印刷装置内でPDLデータとスキャンデータを合成することができる。したがって、スキャナからホストコンピュータにスキャンデータを転送する必要も、ホストコンピュータからプリンタにスキャンデータを転送する必要もない。このため、ネットワーク上の通信トラフィックを減らすことができる。

【0097】また、画像の合成をホストコンピュータで行う必要がないため、ホストコンピュータを有効に利用することができる。

【0098】また、PDL命令の一部として、スキャンデータを合成する命令がプリンタ与えられるために、所望のページに対してスキャンデータの合成を指示できる。

【0099】また、挿入領域がPDLデータによって正確に指示されるので、データ合成には不必要な画像がスキャンデータに含まれていても、必要なスキャンデータのみがPDLデータと合成される。

【0100】また、利用者の望むスキャンデータの領域とPDLデータとの合成及び印刷が行える。また、スキャンデータの領域の指定は、PDLデータで指定された領域に相当するサイズの枠をプレビュー画面上で移動することで行われる。このため、所望の領域の指定が非常に簡単に行える。

【0101】また、ホストコンピュータの画面上で、スキャンデータ中に選択領域を自由に設定することができる。この設定は、スキャンデータのプレビューを見ながら行えるために、利用者の望む部分画像を正確に選択し、選択された部分を、PDLデータにより表された文書等の画像に合成することができる。

【0102】また、スキャンデータのプレビューを行う場合であっても、ホストコンピュータからプリンタへとスキャンデータを送信する必要はないため、ネットワーク上に送り出される画像データは小さなデータであり、通信のトラフィックを増やすことはない。

【0103】さらに、オペレータが選択領域を改めて選択しなくとも、選択領域として、挿入領域に対応するスキャンデータ上の領域が選ばれる。このため、オペレータは、選択領域の位置の決定を省くことができる。

【0104】また、印刷する前に、ユーザが合成に用いるスキャンデータとPDLデータの領域が異なっていることをエラーや警告メッセージによって知ることができる。適切な処置をとることができる。

【0105】また、自動的にスキャンデータの拡大縮小をして、選択領域内の画像を挿入領域のサイズに合わせることもできるので、スキャンデータを前もって拡大したり縮小したりする必要がなくなる。

【図面の簡単な説明】

【図1】第1乃至第2の実施形態における印刷システムの構成例を示すブロック図である。

【図2】レーザビームプリンタ1000の断面図であ

る。

【図3】第1の実施形態によるプリンタの動作手順を示すフローチャートである。

【図4】第1の実施形態及び第2の実施形態それぞれにおいて合成された画像の例である。

【図5】第2実施形態によるプリンタの動作手順を示すフローチャートである。

【図6】第2実施形態のプリンタによる画像合成の様子を示す図である。

【図7】第3乃至第6の実施形態における印刷システムの構成例を示すブロック図である。

【図8】第3の実施形態におけるLBP1000とホストコンピュータ201での動作手順を示すフローチャートである。

【図9】第3の実施形態でホストコンピュータに表示されるスキャナデータのプレビューウィンドウの図である。

【図10】第4の実施形態によるホストコンピュータの動作手順を示すフローチャートである。

【図11】第4及び第5の実施形態でホストコンピュータに表示されるプリンタドライバウィンドウの図である。

【図12】第4の実施形態でホストコンピュータに表示される画面の図である。

【図13】第4及び第5の実施形態におけるプリンタによるプレビュー画面の読み込み手順を示すフローチャートである。

【図14】第4及び第5の実施形態におけるプリンタの動作手順のフローチャートである。

【図15】第4及び第5の実施形態において、合成される画像の例を示す図である。

【図16】第5の実施形態によるホストコンピュータの動作手順を示すフローチャートである。

【図17】第5の実施形態でホストコンピュータに表示される画面の図である。

【図18】第6の実施形態において合成される画像の例を示す図である。

【図19】合成する画像に優先順位をつけた場合の画像の例を示す図である。

【図20】合成する画像に優先順位をつけた場合の画像の例を示す図である。

201 ホストコンピュータ

202 スキャナ

204 I/O

205 PDL解析部

206 メモリ

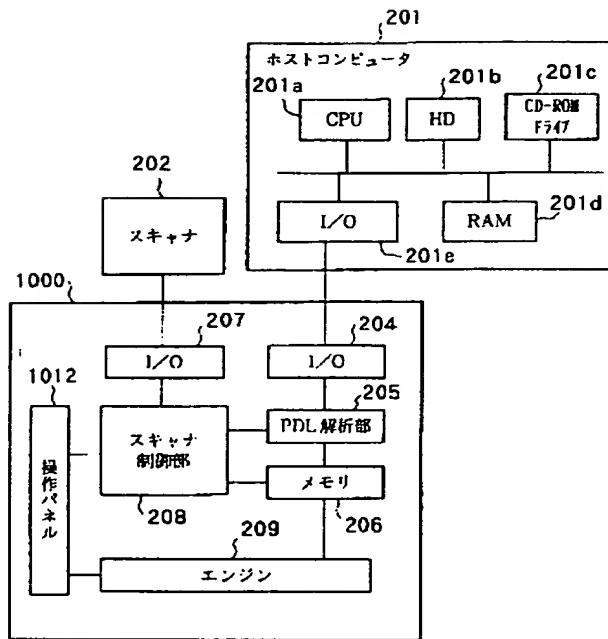
207 I/O

208 スキャナ制御部

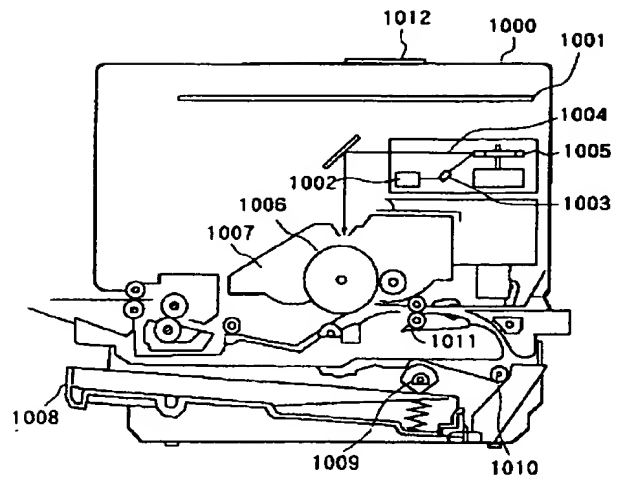
209 エンジン

507 I/O

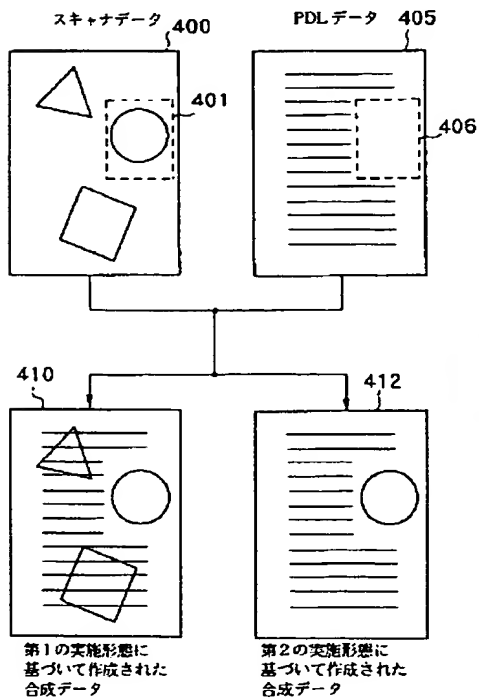
【図1】



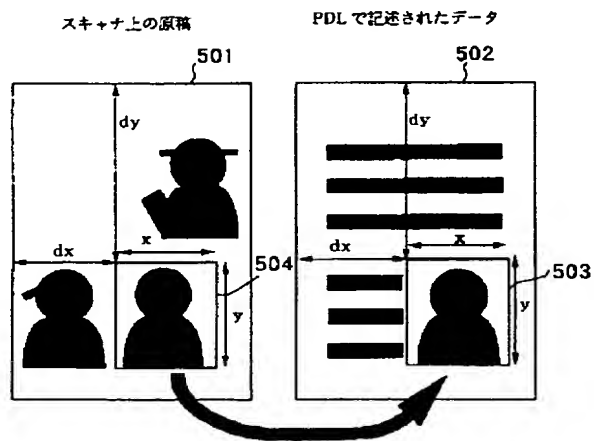
【図2】



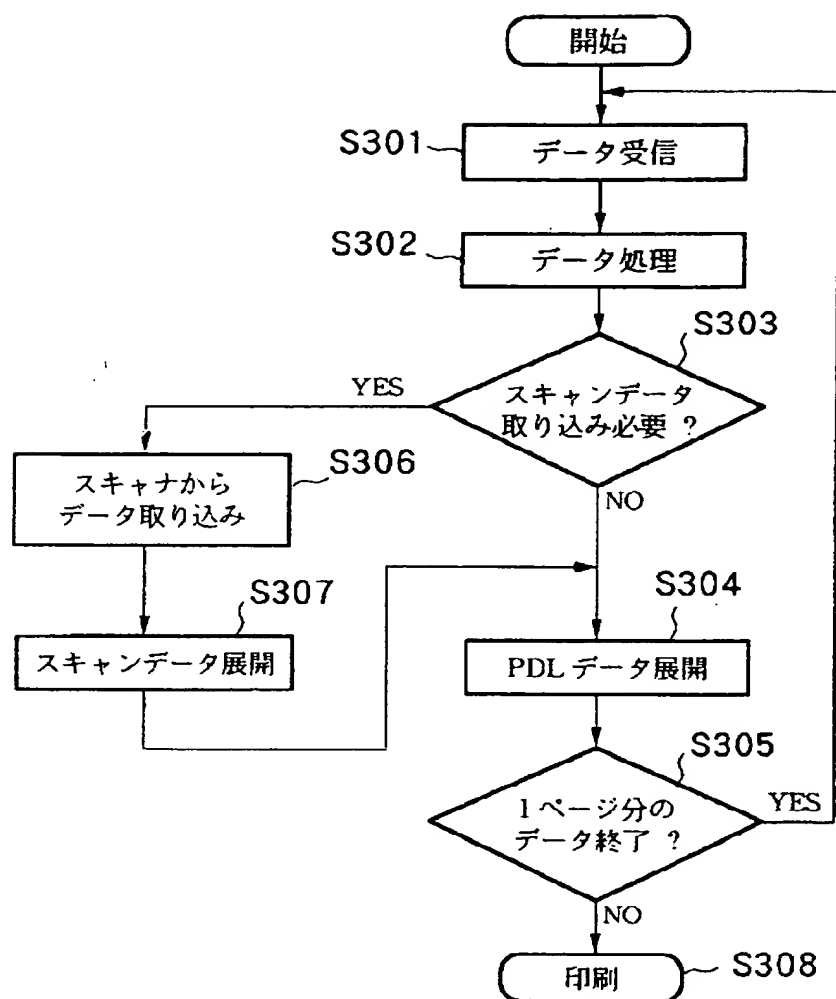
【図4】



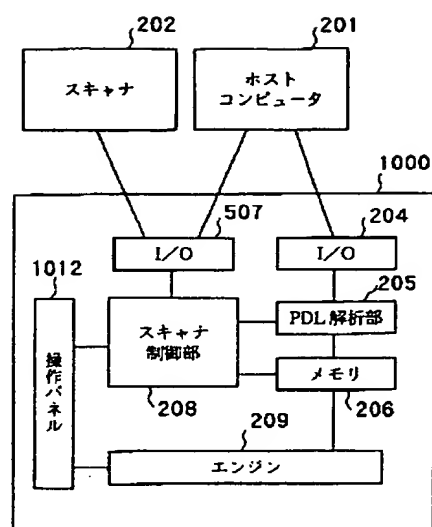
【図6】



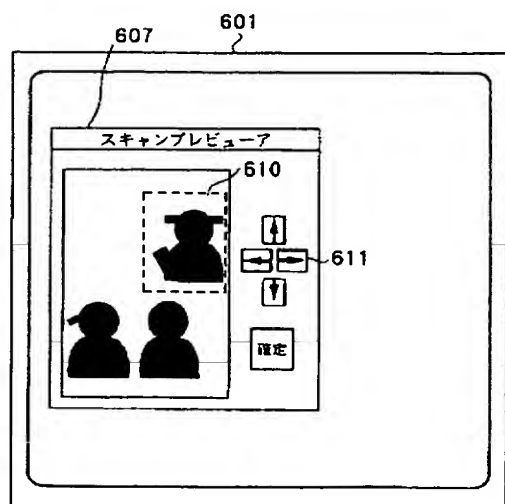
【図3】



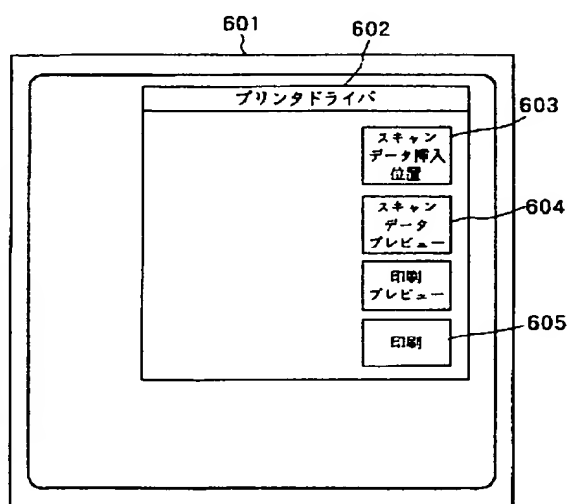
【図7】



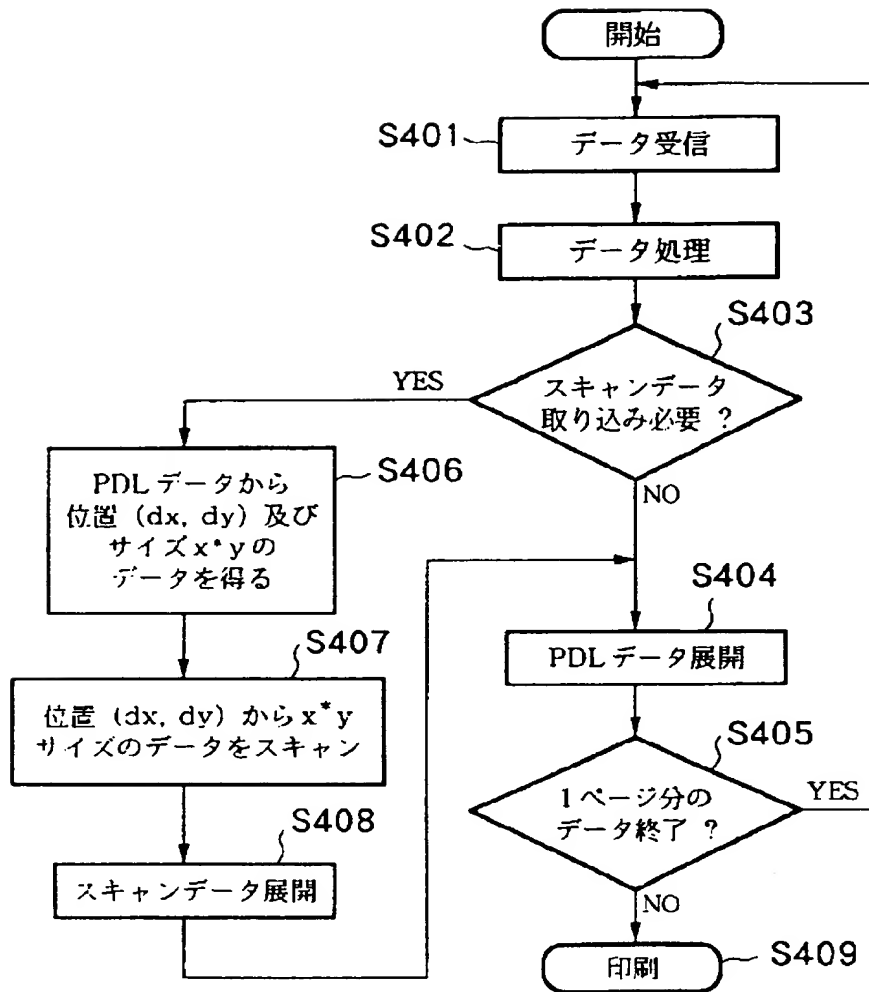
【圖9】



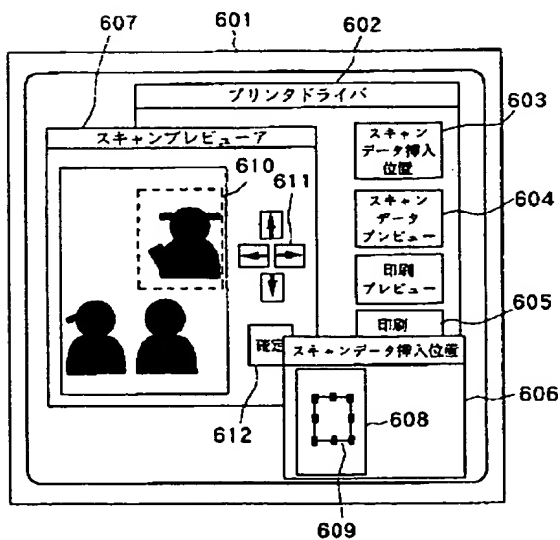
【図 11】



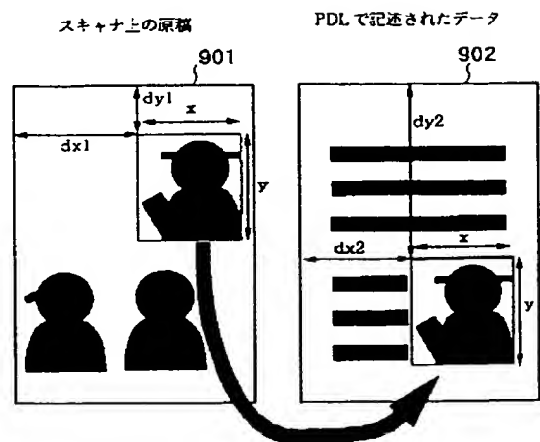
【図5】



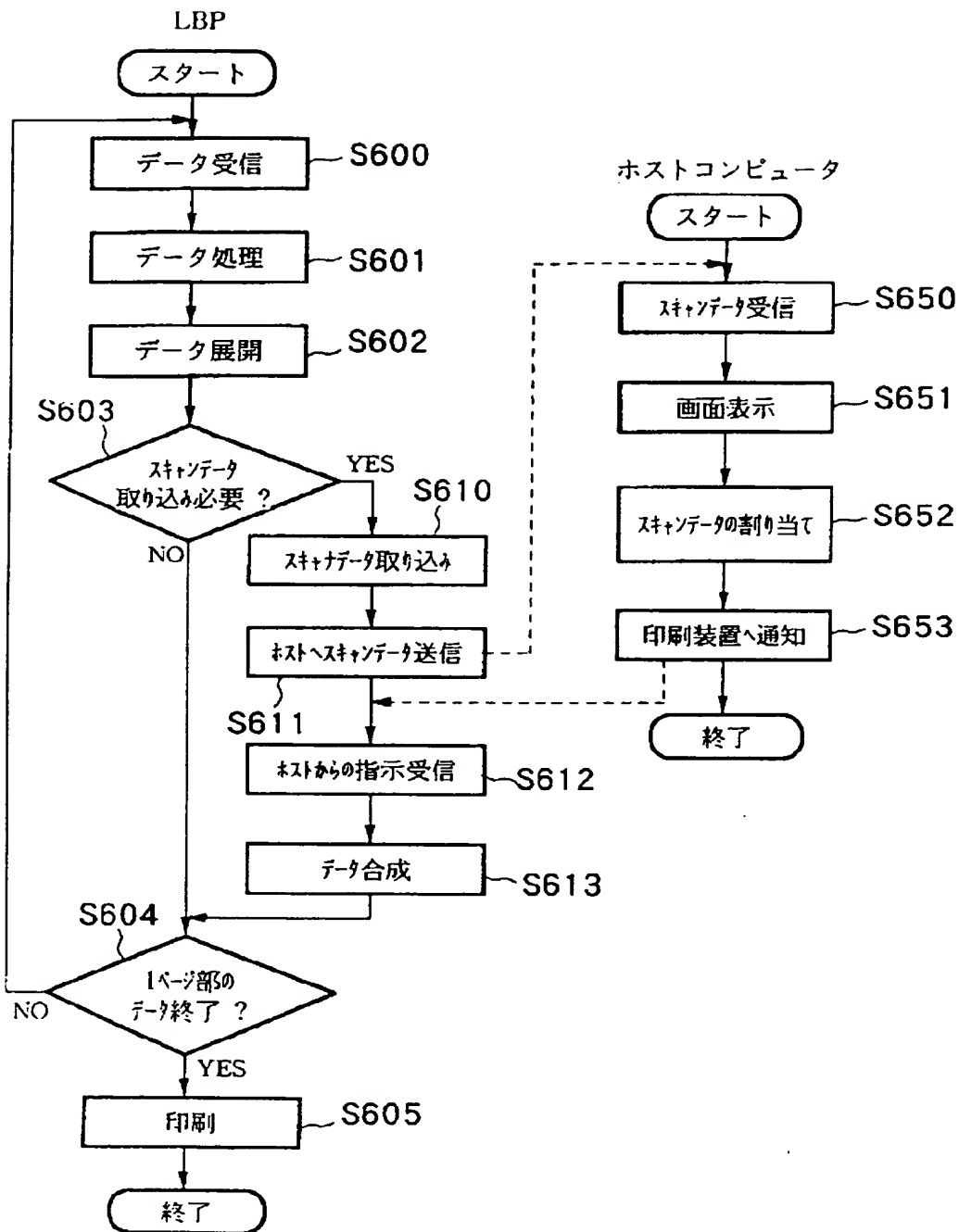
【図12】



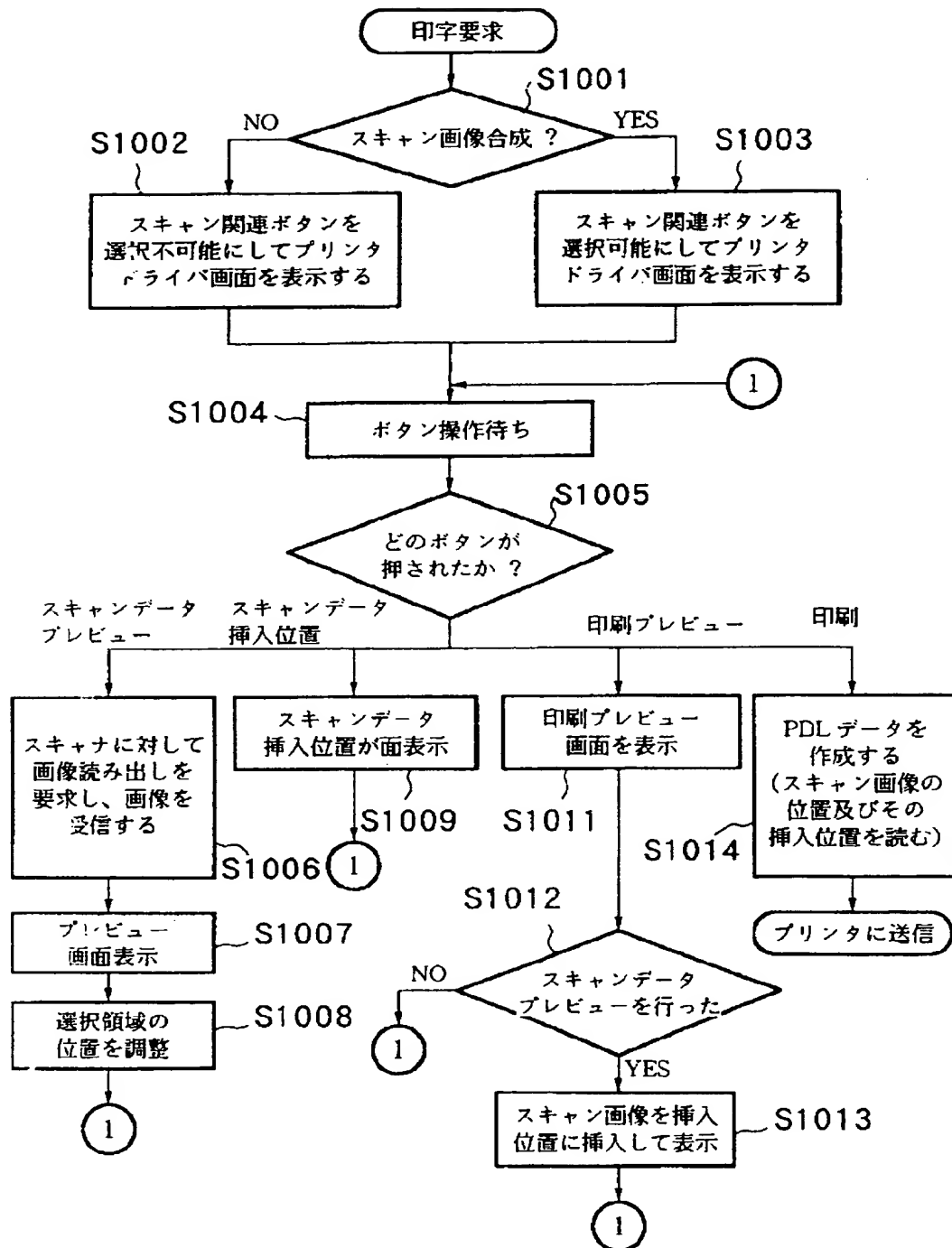
【図15】



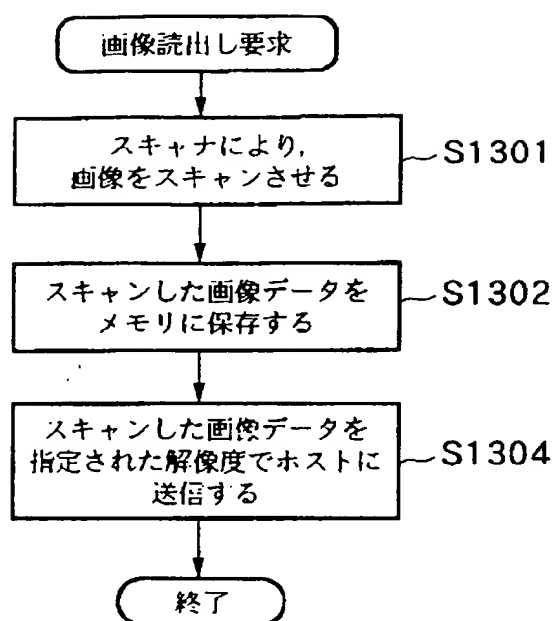
【図8】



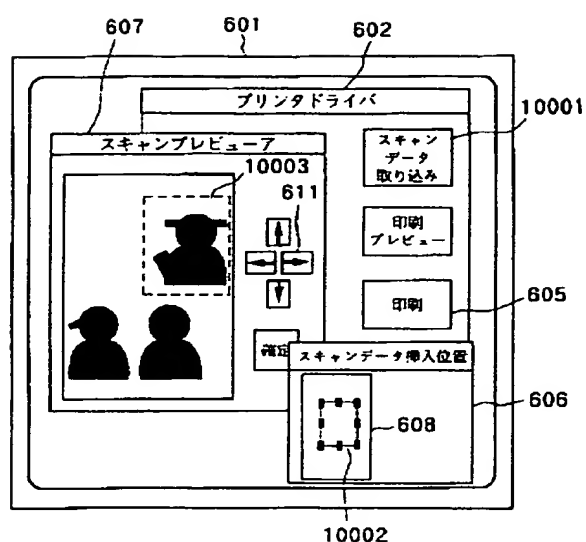
【図10】



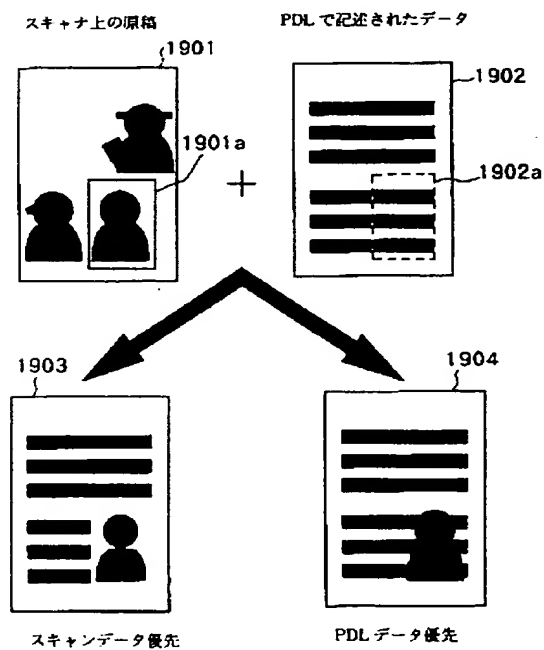
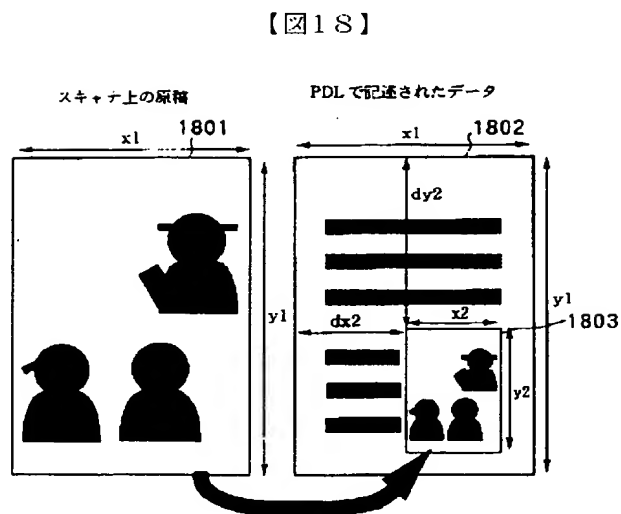
【図13】



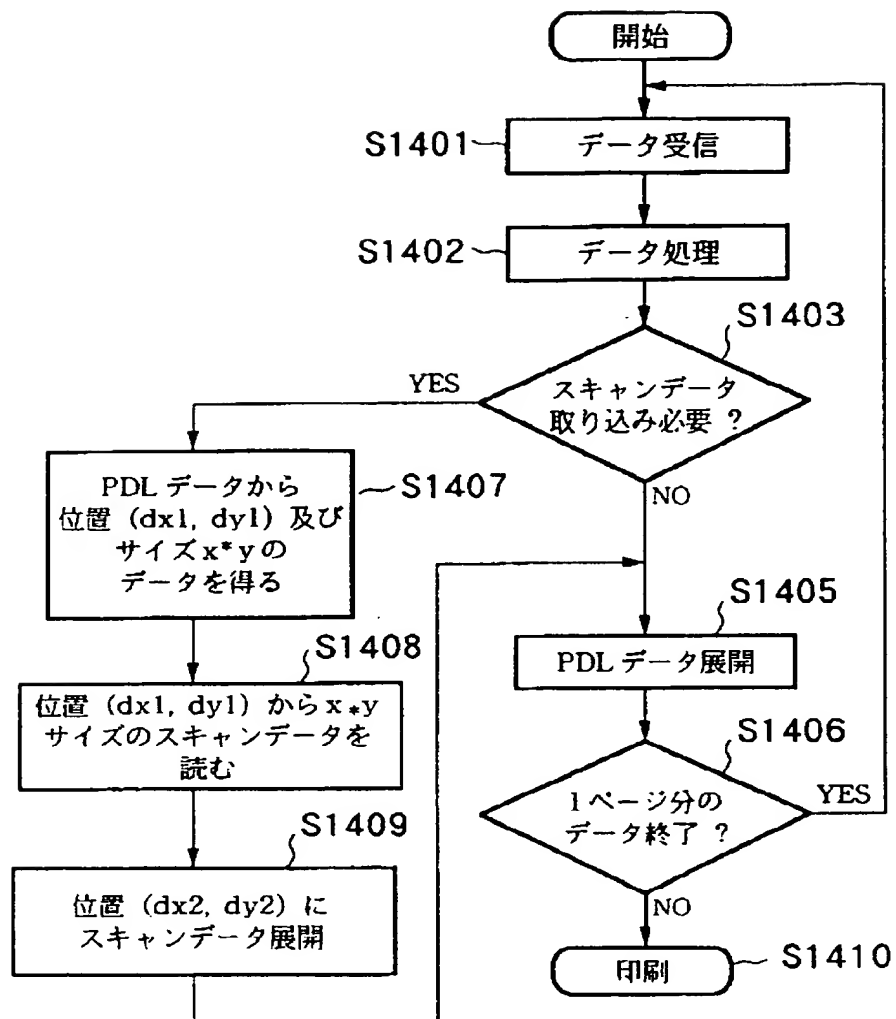
【図17】



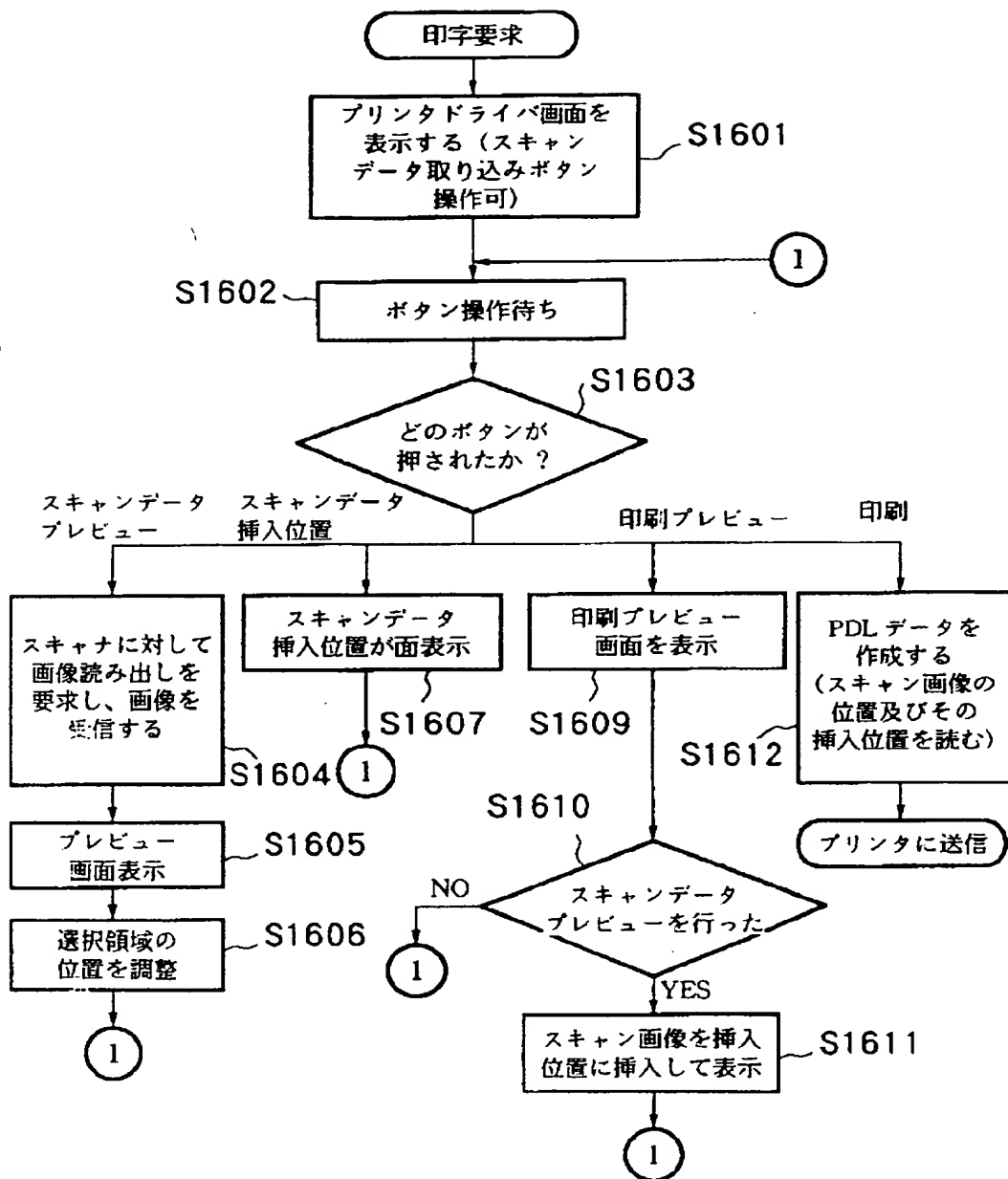
【図19】



【図14】



【図16】



【図20】

